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MACHINE GUN, 7·62 MM, L7A1 AND MOUNTING, TRIPOD, 7·62 MM MG, L4A1

TECHNICAL HANDBOOK—TECHNICAL DESCRIPTION

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INTRODUCTION

SCOPE OF THE REGULATION

1. This regulation describes the Machine gun, 7·62 mm, L7A1, including details of the action of the mechanism, and the Mounting tripod, 7·62 mm MG, L4A1.

MACHINE GUN 7·62 MM L7A1

DESCRIPTION

General

2. This machine gun is designed to serve a dual role. It can be used either as a LMG fired from its bipod or as a sustained fire MG fired from the tripod. In these roles it is intended to replace the Bren L4 and the Vickers MG. It is a fully automatic, belt fed, gas operated, air-cooled weapon, capable of a sustained high rate of fire in bursts. Heavy and light barrels will be supplied—the heavy barrel being used in the sustained fire role. Both types of barrel are quickly removable. The feed is by belt of disintegrating links, from left to right. Belts are factory filled and metal box packed with 200 rounds. Belt links can easily be joined or broken as required to give a belt of any length. Empty cartridge cases are ejected downwards and links to the right. Empty links can be refilled by hand for use in emergency or if required for training. The cyclic rate of fire is controlled by a gas regulator and is achieved by decreasing or increasing the speed of gas escape. The gun is designed to fire at a cyclic rate of 750 rounds per minute. The gun is of robust construction and the use of light alloys where possible has reduced overall weight to a minimum.

Barrels

3. (*a*) The light barrel is of steel with a chrome plated bore. The rifling has four grooves, concentric with right-hand twist. Pitch of the rifling is 8·66 in. Externally the barrel is threaded left-hand at the breech end to receive the barrel locking nut with carrying handle. Forward of this thread and on top of the barrel, a recess is cut to limit the rotation of the carrying handle. A flat is formed on the underside to locate and prevent the barrel rotating when assembled. About mid-way along the barrel, on its underside, two projecting lugs are formed. These lugs position the front end of the barrel on assembly to the gun and ensure that the gas plug of the gas regulator on the barrel enters the front end of the gas cylinder without causing damage. Forward of the positioning lugs on the underside, a hole is drilled radially into the bore. This is the vent which conveys the gas down into the gas block and regulator. At the muzzle, externally, a seating is formed for the foresight block, which is retained in position by a lateral pin. Forward of this is the external thread on which the flash hider is secured. The light barrel is numbered to the gun.

(*b*) The heavy barrel, excluding the barrel locking nut with carrying handle, gas block, foresight block and flash hider, is built up of three main elements. These elements are the barrel, stellite liner and chamber. The length of the liner is 6 in. and at its rear end the external diameter is increased and a shoulder formed. The liner is shrunk into the barrel as far as the shoulder and the chamber section is then screwed on tightly and secured with a lateral pin. The rear end of the liner is thus rigidly positioned. Between the front face of the liner and the barrel proper, a gap of up to $\frac{1}{32}$ in. is left to allow for different expansion rates

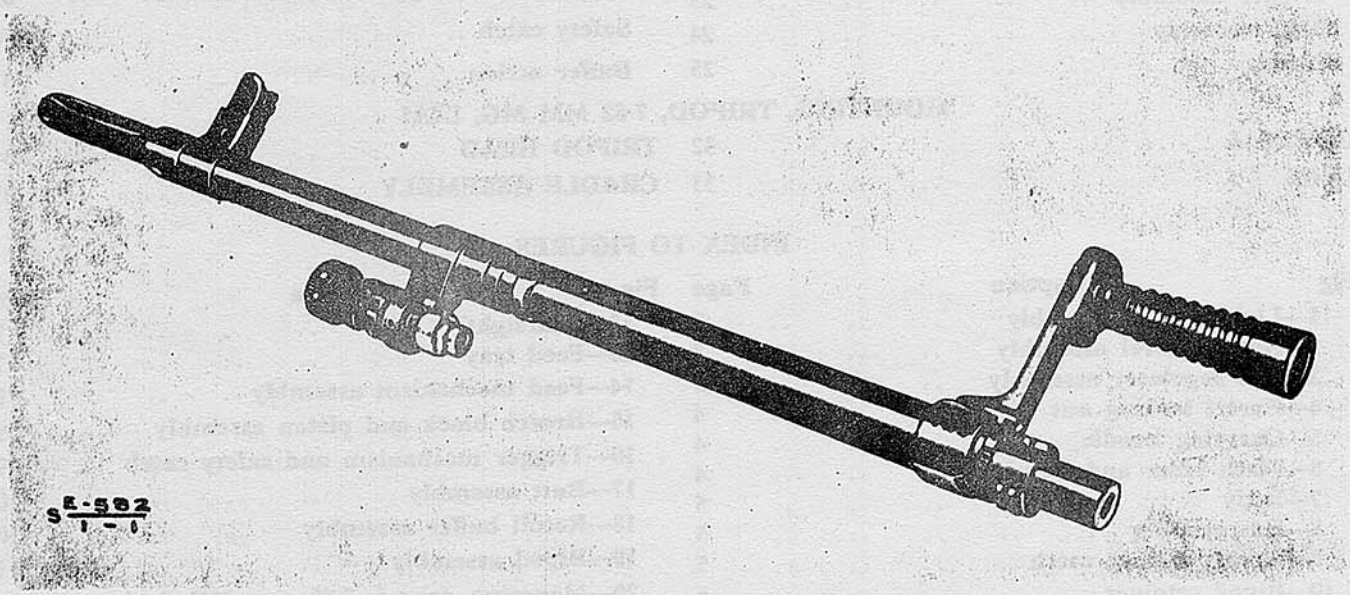

Fig 1—Light barrel assembly

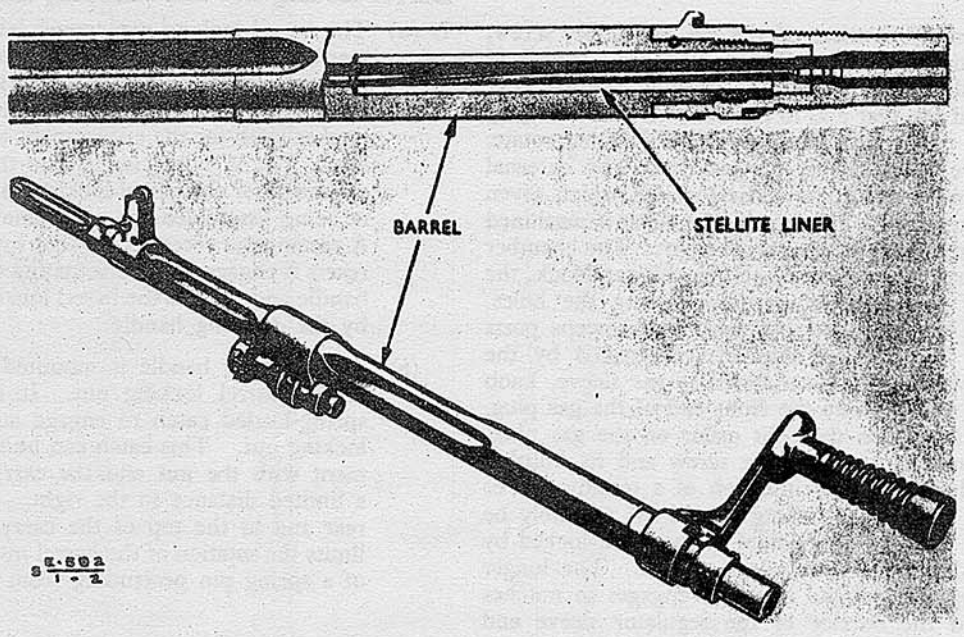

Fig 2—Heavy barrel assembly

of the barrel and liner. This gap will be clearly seen as a circumferential line around the bore when viewing the barrel. The rear end of the liner is in the neck of the chamber and may be visible. The chamber section of the barrel carries all the features externally which are found on the light barrel for the retention of the barrel locking nut and carrying handle. The chamber section is sleeved right over the rear end of the barrel and its forward limit will be seen as a line externally round the barrel assembly in front of the carrying handle flange. The extra weight of this barrel comes from increased external diameter and this eliminates the need for positioning lugs, as found on the light barrel. On the upper surface of the barrel (in front of, and behind the gas block) large flutes have been ground into the barrel. A larger surface area is thus presented and cooling accelerated. The gas vent and block, foresight assembly and flash hider are similar in assembly to those on the light barrel. The heavy barrel will not be numbered to any gun.

Gas block

4. This is sleeved on the barrel and secured by a lateral pin. It is drilled vertically to coincide with the barrel gas vent and bored out longitudinally to receive the gas plug. Three radial holes—one at the bottom and one each side—are drilled for gas escape. A further hole in the bottom is drilled coincidental with the gas vent to facilitate the use of the cleaning tool. On the rear face a step is formed. Against this step the gas plug is positioned and prevented from rotating.

Gas plug

5. The gas plug is assembled into the gas block from the rear. A collar is formed on the plug to prevent further forward movement. A flat on the collar registers with the step on the rear face of the gas block and prevents any rotary movement of the plug. Externally at the front end, the plug is recessed to house a split collar. After assembly, the rear face of the split collar is located against the front face of the gas block and the gas plug is held immobile. The centre of the gas plug is bored from the rear and a radial hole leads from the front of this boring to register with the vertical hole through the gas block to the barrel vent. Three more radial gas escape holes are drilled from the central boring. When the plug is assembled they are in register with the three gas escape holes in the gas block. The centre of the gas plug is also drilled and tapped from the front, to receive the actuating screw of the gas regulator.

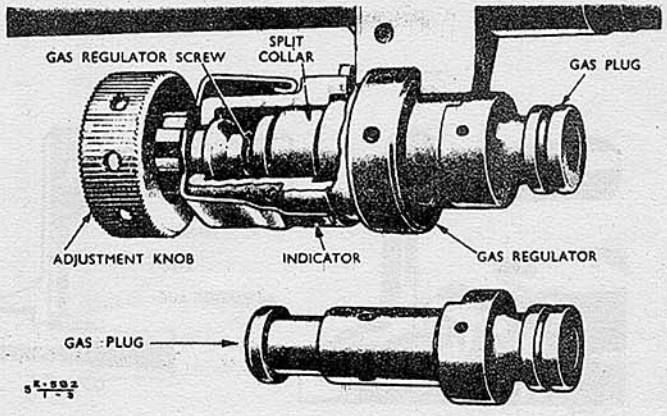

Fig 3—Gas regulator assembly

Gas regulator

6. This sub-assembly consists of the gas regulator, screw, knob and gas setting indicator. The regulator is a machined sleeve made to slide closely over the front of the gas plug and is cut away at the rear end to permit it to pass over part of the gas block. It is thus allowed to slide but not rotate. Where the sleeve passes over the gas block the external diameter is increased to form a collar through which seven gas escape holes are drilled. Internally the collar is machined away to form a small gas expansion chamber. The chamber is positioned over the gas escape holes in the gas block, the forward edge of the chamber partially closing the holes. Thus, by sliding the regulator, the area of the escape ports may be varied. The sliding motion is controlled by the regulator screw which, when assembled to the sleeve, knob and indicator, is screwed into the front end of the gas plug. The assembly also retains the split collar on the gas plug. The regulator knob is keyed to the screw and its knurled outside face is drilled for the insertion of a tommy bar or nose of a round to assist in turning should the assembly be stiff or very hot. The indicator is of spring steel, locked by tabs to the regulator knob and turns with it. The longer of the two spring arms of the indicator engages in notches machined around the outside of the regulator sleeve and indicates the gas setting. The notches are numbered 0—9, with the word 'FASTER' and an arrow engraved adjacent. The arrow points toward the lower numbers.

Barrel locking nut and carrying handle

7. (*a*) The barrel locking nut screws left-handed on to the rear end of the barrel. Interrupted Acme threads are machined on its exterior for locking into the body. A flange forward of the threads is provided with ratchet teeth for the engagement of the barrel locking catch. A 'V' notch is cut into the flange to provide clearance for the barrel locking catch when the barrel is being assembled to, and removed from, the gun. A rectangular recess is also cut into the flange. This recess is engaged by the actuating catch of the carrying handle and enables the barrel locking nut to be rotated by the carrying handle.

(*b*) The carrying handle is mounted on a ring forward of the barrel locking nut. It is provided with a spring-loaded catch to engage and rotate the barrel locking nut. This catch can be lifted out of engagement with the nut and the carrying handle rotated a limited distance to the right. A recess cut in the rear and at the top of the carrying handle bracket, limits the rotation of the barrel nut by the engagement of a spring pin protruding from the nut.

Flash hider

8. This is of slotted tubular design and is screwed to the muzzle and retained by a washer. Flats are provided for the application of a spanner.

Foresight assembly

9. The foresight block is formed on a band which fits around the barrel and is secured by a lateral pin. A lateral dovetail seating is cut across the top of the block to accommodate the foresight housing. The block is drilled and tapped, left and right, to accommodate two Allen screws. These screws provide the lateral adjustment of the foresight housing and clamp it when correct. The foresight housing is mounted in the dovetail on top of the block. It is formed with two wings to protect the foresight and is drilled vertically and tapped to receive the stem of the foresight. Vertical adjustment of the foresight is obtained by rotation. A spring retainer is fitted in the housing and this gives 'clicker' adjustment to the lateral adjustment screws. The foresight is of blade pattern, undercut on both edges to give good definition at each half turn. Blades are issued in two sizes, No 1 approximately 0·45 in. high and No 2 approximately 0·37 in. high. Blades are marked '1' or '2' on the side.

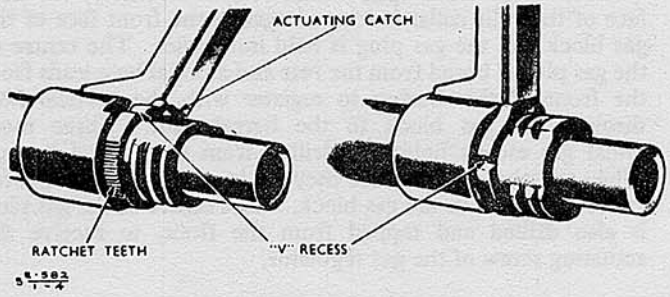

Fig 4—Barrel locking nut

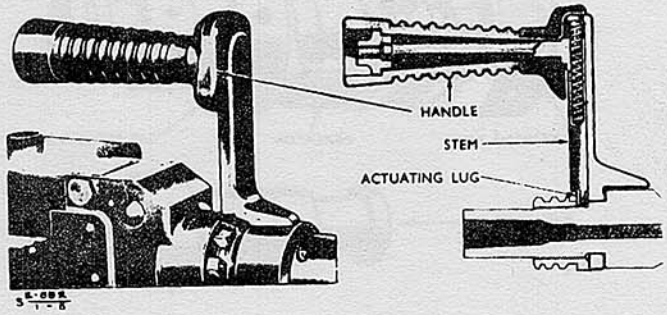

Fig 5—Carrying handle

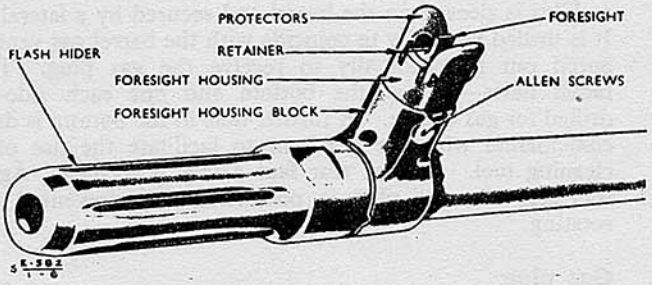

Fig 6—Flash hider and foresight

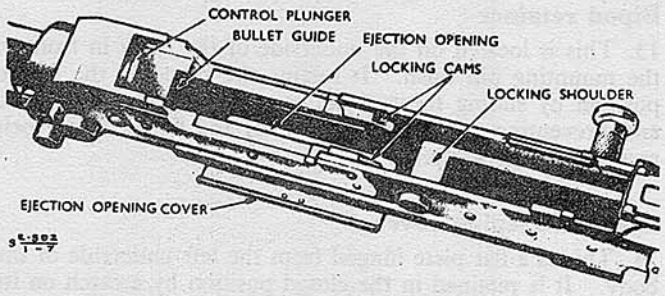

Fig 7—Body

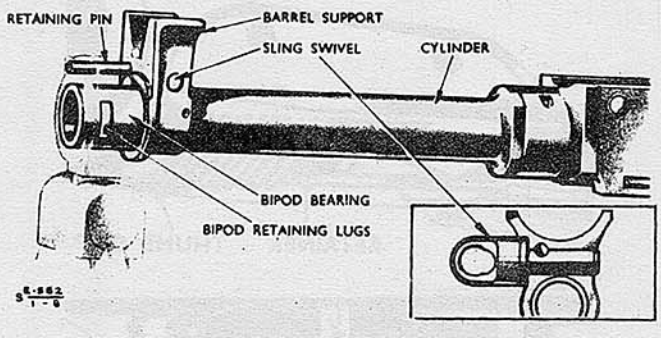

Fig 8—Gas cylinder

Body

10. The body is fabricated from plates riveted together and contains components essential to the operation of the gun permanently secured to it. The rear of the body is machined internally to receive the butt and buffer block. On the top rear surface is mounted the backsight bed, in front of which two recesses for the cover catches are cut and in front of these are two positioning lugs for the cover. The upper surfaces of the side-plates are machined to receive the cover and feed tray and at the front a block is fitted which forms the barrel bearing. In the barrel bearing block is fitted a plunger and two springs to support the front cover in the open position. The barrel bearing is machined from the rear with a bullet guide and clearances are cut for the feed horns of the breech block. In the front of the barrel bearing, interrupted threads are cut to receive the barrel locking nut and forward of this, flats are formed for the location of the barrel. A hole is provided on the left side for entry of the barrel locking catch. On the underside, at the rear, two lugs are formed to receive the securing pin of the trigger housing. A further two lugs are formed, at the front of the location for the trigger housing, for the rear mounting pin and a trunnion block formed under the barrel bearing for the front mounting pin. The bottom plate is slotted for the operation of the trigger mechanism and also for the ejection opening. The body is machined for the assembly of a dust cover, the bipod retainer catch and the ejection opening cover hinge and catch details. On the right side-plate, guides are riveted for the cocking handle slide and the side-plate is slotted for the passage of the cocking handle stud. Forward of the slot for the cocking handle stud a small recess is formed to receive the plunger on the cocking handle slide and retain the slide in the forward position. Internally the locking shoulder, breech block and piston guides are fitted and riveted to the side-plates. The locking shoulder is further stiffened by the insertion of a lateral pin through the gun body and shoulder. Forward of the locking shoulders and above, on both sides of the breech casing, two solid cams are secured to the side-plates to operate the locking action of the breech block. A keyhole undercut slot is machined in the bottom plate at the rear to locate the pin on the rear of the return spring rod. Four screwed holes and a circular locating recess are machined on the left side-plate of the body. They are for the attachment of the infra-red sight bracket, which will be fitted when it becomes available. It is probable that the four holes will be plugged at the time of issue, but if it is found that headless screws have been fitted, the screws will be removed and the holes filled with heavy grease. If the screws are not removed there is a danger that they will work their way through the body and damage the gun mechanism. Headless screws will only be found in guns with serial number prefixed BL 62.

Gas cylinder

11. The cylinder is fitted to the front end of the body. It is provided with two bipod retaining lugs and a barrel bearing block on the front end. The barrel support is fitted with a sling swivel on the right side and a retaining pin for the bipod which also acts as an anti-rotational stop for the gun.

Barrel locking catch

12. The catch is mounted on the left side of the barrel bearing in the body. It retains the barrel locking nut in the locked position when the barrel is assembled to the gun. A pawl

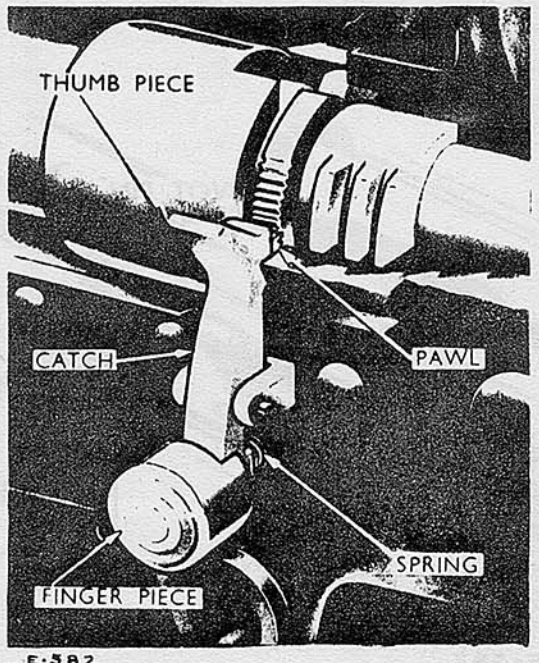

Fig 9—Barrel locking catch

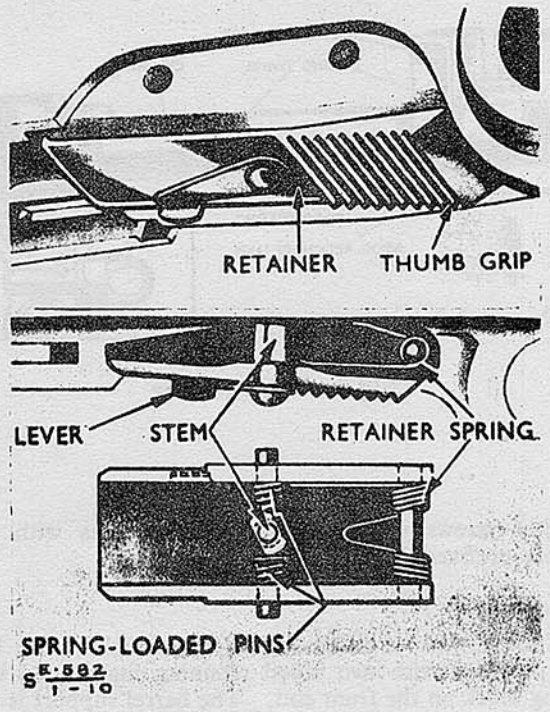

Fig 10—Bipod retainer

is cut on the face of the catch which passes through the body and engages in the ratchet teeth of the nut. The catch is held in engagement by a spring, housed in the lower end of the catch and bearing against the body. The catch is disengaged by pressure on the thumbpiece or finger-piece on the top and bottom of the catch respectively.

Bipod retainer

13. This is located on the underside of the body in front of the mounting pin bush. It retains the bipod in the folded position by sliding forward between the shoes of the bipod and preventing the disengagement of the hooks from their recesses in the body.

Ejection opening cover

14. This is a flat plate hinged from the left underside of the body. It is retained in the closed position by a catch on its upper face. A spring, located around the hinge pin of the cover, opens and holds open the cover, when a chamfered projection on the catch is struck by the piston on its forward or rearward movement.

Dust cover

15. The cover is a plate of flat spring steel located on the underside of the body forward of the ejection opening. Its purpose is to prevent dirt from entering the body and it can be removed to allow access to the interior of the body for cleaning.

Cocking handle assy

16. A knurled cocking handle is attached to a slide running between guides on the right side of the body. A cocking stud secured to the slide by a pin protrudes through the right side-plate of the body to engage the piston extension. A spring-loaded retaining catch holds the assembly when in the forward position.

Rearsight

17. The rearsight leaf hinges at the front of the rearsight ramp and is controlled by a spring and plunger housed in the front end of the bed. It can be used folded down for

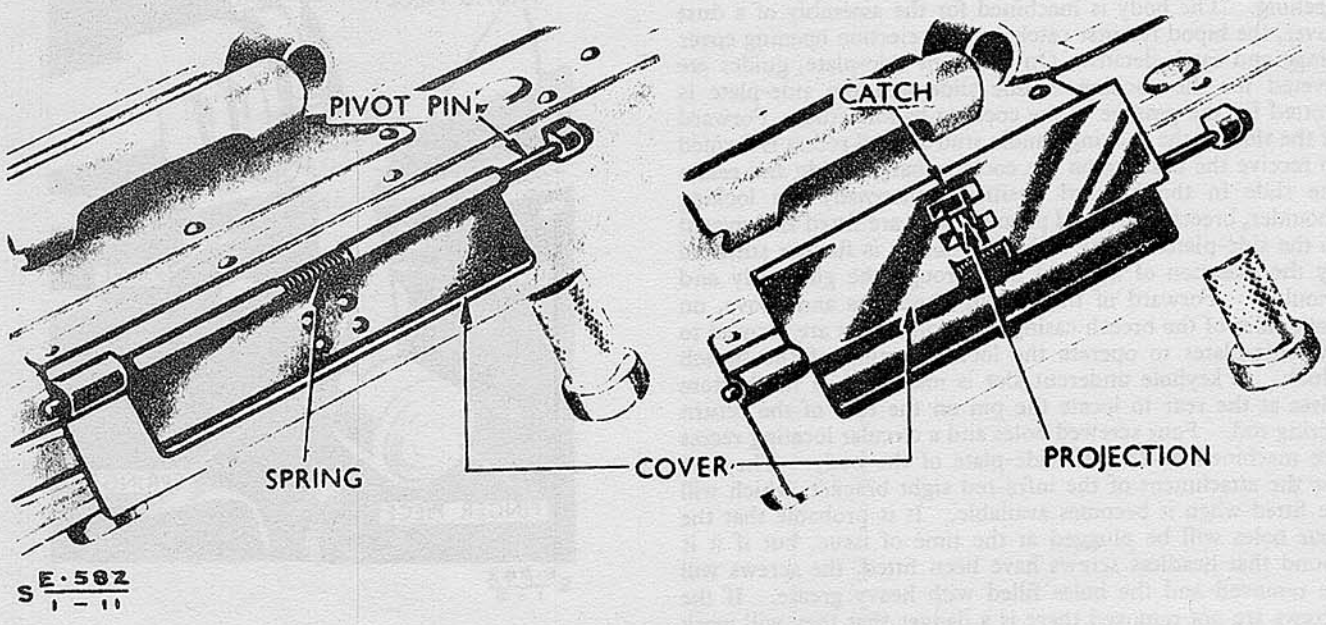

Fig 11—Ejection opening cover

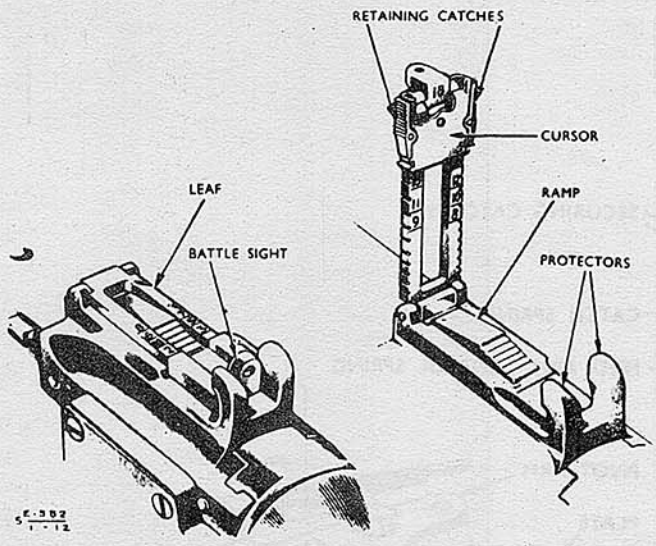

Fig 12—Rearsight

ranges of 200 to 800 metres, and the leaf is graduated on its upper surface to coincide with steps cut in the ramp to give 100 metre intervals. Ranges from 800 to 1800 metres are engraved on the reverse side of the leaf, which is used vertically, and graduations in steps of 50 metres are cut in the side faces of the leaf for engagement of the cursor retaining catches. An aperture is formed at right-angles to the rear edge of the leaf for use with the leaf down, and the forward edge of the cursor is used to indicate the range. When the leaf is raised, the hole drilled through the cursor is used as the backsight aperture and the upper edge of the cursor is used to indicate the range. A stop, leaf, screw is fitted to the leaf to prevent the cursor being lowered beyond the 200 metres graduation.

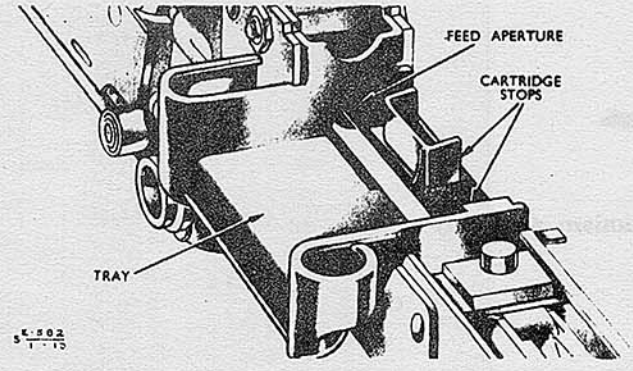

Fig 13—Feed tray

Feed tray

18. The feed tray is of plated steel and lies across the feed aperture of the body. It is pivoted at its front end on the cover axis pin. The belt guide is formed on the left, and the cartridge stops on the right with an exit for the belt links. An aperture is cut in the floor of the tray. The aperture is narrow at the rear to position the round for contact with the feed horns. The aperture is increased in width forward of the belt links to permit passage of the round down into the chamber.

Feed mechanism assembly

19. The assembly is mounted on the underside of the cover. The cover is pivoted at its front end on the same bolt as the feed tray; a spring and plunger in the body holds it in the open position. It is secured in the closed position by two catches mounted at the rear of the cover and operated by a single spring. The catches engage in recesses cut in the side-plates of the body. The feed mechanism is operated by a channelled feed arm pivoted inside the cover and retained by a long flat spring on its left side. The movement of the feed arm is obtained by a spring-loaded roller on the breech block travelling in the channel of the feed arm. The front end of the feed arm is forked to engage and actuate the feed pawl assembly by means of a pivot arm. Attached to the pivot arm are two plates; on one is mounted the inner feed pawl and on the other, the two outer pawls. The plates are pivoted and move on two guide rollers mounted on the cover, across the feed tray, carrying the belt from left to right. A spring-loaded guide is fitted to the right side of the cover and guides the cartridge into the chamber during the forward movement of the breech block.

Breech block and piston assembly

20. (*a*) **Breech block**

The breech block consists of the block and the locking lever. The locking lever is secured on an axis pin half-way along the underside of the block. The block is formed with guides on its sides and is drilled lengthways to accommodate the firing pin. The front face is recessed into a cartridge seating and at the lower edge of the seating the block is machined to house the extractor, stay and spring. At the top edge of the cartridge seating recess the block is drilled to house the ejector and spring, which are retained in the block by a lateral pin. Above the cartridge recess on the face of the breech block, the two feed horns are formed. On the top of the breech block at the rear is a spring-loaded roller which imparts an oscillating movement to the feed arm during operation of the gun. It is spring-loaded so that the cover may be closed irrespective of the relative positions of roller and feed arm. During cocking action the roller springs into correct location in the channel of the feed arm. Hinged on the underside of the breech block is the locking lever which drops down in front of the locking shoulder at the completion of forward movement. It has clearances machined into both sides to clear the body guides during the dropping movement. The forward curving top faces of the locking lever ensure that this downward swing of the locking lever is

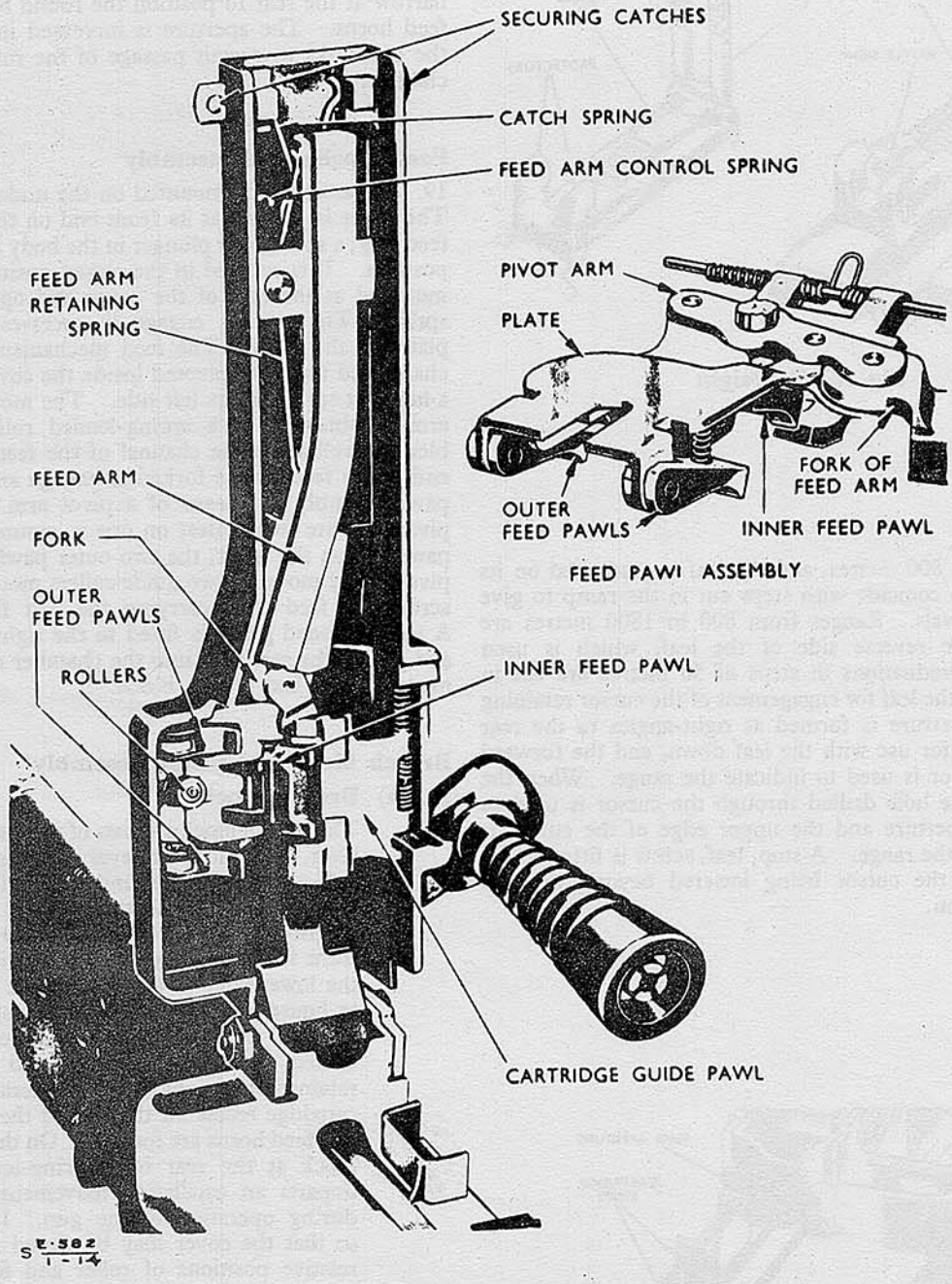

Fig 14—Feed mechanism assembly

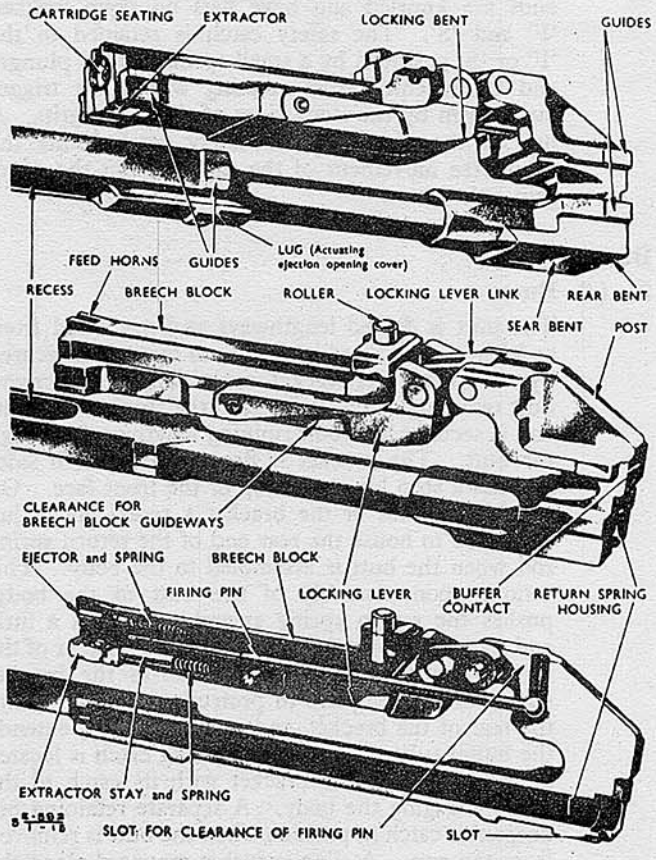

Fig 15—Breech block and piston assembly

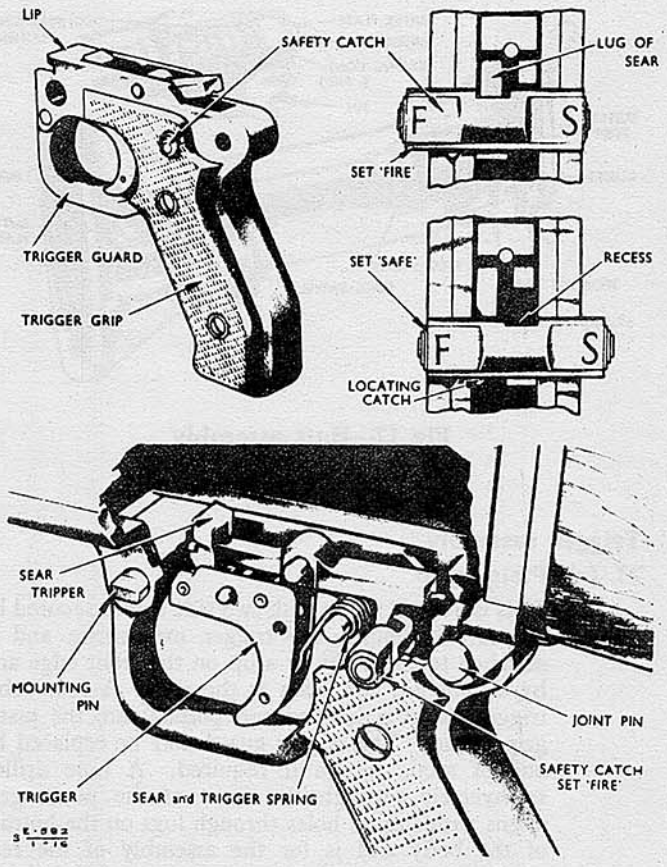

Fig 16—Trigger mechanism and safety catch

positive when the faces strike the locking cams in the body at the end of forward action. The locking lever is connected at its rear **end** to the locking lever link by two hinge pins.

(*b*) **Piston**

The piston consists of a fluted stem with a recessed head at its forward end. When in the forward position the head fits over the rear end of the regulator gas plug. Two circular flanges are formed on the stem immediately in rear of the piston head to assist backward action by utilising any gas escaping past the piston head. At its rear end the piston is fitted into the piston extension and secured by a vertical pin. This joint permits limited movement between piston and extension in any plane. The piston extension has guides machined on its sides and a large slot is machined through it to permit the downward ejection of empty cases. The front face of the piston extension contacting the rear of the gas cylinder, limits its forward movement. On the bottom of the piston extension and behind the ejection opening, a lug is formed to operate the ejection opening cover catch. At the rear a recess is formed, the rear face of which forms the bent on the piston for engagement with the sear. The piston extension is bored lengthways to house the return spring and rod. The rear face of the extension is slotted to provide a clearance for the locating pin of the return spring rod. The piston extension is formed into a post at the rear, the post having guides machined on its sides. The post is drilled and slotted to receive the rear end of the firing pin. The post is drilled laterally at the front to accommodate the axis pin of the locking lever link.

Locking lever link

21. The link connects the locking lever of the breech block to the piston post. It is freely hinged at front and rear on lateral pins and is the means of forming a breech sealing toggle joint at the moment of firing. It is slotted for firing pin clearance.

Return spring and rod

22. The return spring is of three-strand wire and is held under compression on a telescopic rod. The front end of the assembly is housed inside the piston extension. At the rear end of the rod a pin is riveted which seats into the key-hole slot in the base of the body.

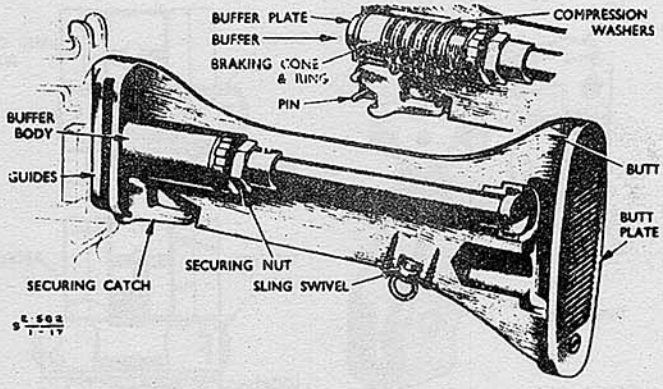

Fig 17—Butt assembly

Trigger assembly

23. (*a*) **Pistol grip**

This is a metal frame with two side stocks secured by screws. It houses the trigger mechanism and is attached to the body by a lip on the front edge and by a joint pin and bush at the rear. A removable trigger guard is hooked and pinned into the pistol grip frame. The trigger guard may be replaced by one of arctic design if required. A hole drilled transversely through the front of the pistol grip aligns with similar holes through lugs on the bottom of the body and is for the assembly of the rear mounting pin when the gun is mounted on the tripod.

(*b*) **Trigger mechanism**

This is located within the frame of the pistol grip. The trigger and sear pivot on axis pins and are actuated by a common spring. The spring is mounted on a pin and is coil shaped, with its ends extended to engage the trigger and sear. The trigger carries a spring-loaded sear tripper, which works in conjunction with the tail of the sear and projects into the piston extension runway of the body.

(*c*) **Safety catch**

Located at the top rear of the pistol grip, the safety catch is in the form of a cylindrical plug operating transversely through the grip and with its ends protruding on each side. It is recessed at its centre to provide clearance for the lug of the sear. Its ends are knurled and have flats on them marked 'F' and 'S'. The safety catch is retained in the 'F' or 'S' positions by a small spring-loaded plunger and is prevented from rotating within the trigger mechanism by the stock sides of the pistol grip. A lug on the shank of the safety catch limits the transverse movement of the catch within the pistol grip side-plates.

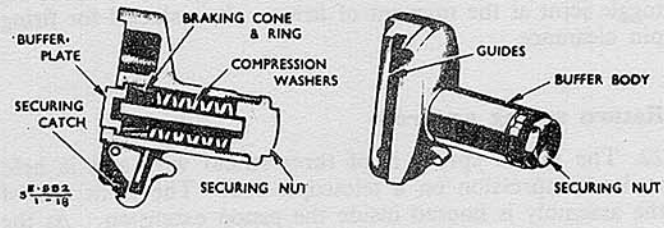

Fig 18—Recoil buffer assembly

Butt assembly

24. (*a*) **Butt**

The butt is drilled lengthways and machined front and rear. It is fitted with a metal butt-plate secured by two screws. A bracket, containing the buffer and butt retaining catch, is fitted to the front of the butt and is secured by a bolt running lengthways through the butt. The bracket is flanged down both sides and has a stop lug at the top of the front face. On the bottom face of the bracket a recess and a lug is formed to house the rear end of the return spring rod when the butt is assembled to the body. This action, upon assembly of the butt to the body, pushes the return spring assembly forward a little and removes the strain from the pin at the rear of the return spring rod. A round hole in the bracket allows the buffer plate to protrude forward. From the rear of the bracket, and inside the butt, extends the buffer tube. The butt retaining catch is located at the bottom of the bracket with its catch to the front, engaging the body. A separate retaining pin keeps this catch in position when the butt is removed from the gun. A sling swivel is mounted along the bottom edge of the butt.

(*b*) **Buffer**

This consists, from front to rear, of the buffer plate, braking cone and ring, a series of compression washers and the securing nut. The securing nut screws into the rear of the tube and compresses the assembly. The nut has a serrated ring for the engagement of a locating spring. It has flats for the application of a spanner and is tapped internally at the rear to receive the bolt which holds the butt assembly together.

(*c*) In the sustained fire role, the butt is removed and replaced by a buffer block. It consists of an assembly similar to that contained in the butt bracket except that the securing nut is not drilled and tapped at the rear. The retaining catch is also similar in operation but of different contour.

Bipod

25. The bipod is located at the front end of the gas cylinder and is attached on interrupted flanges. When in position, a pin is driven forward through the barrel guide into a recess in the bipod sleeve, permitting limited axial rotation of the bipod about the cylinder. A hole in the sleeve allows the pin to be driven back for removal of the bipod. A stem on the underside of the sleeve seats into the bipod bush. The stem is recessed on one side to receive a lateral retaining pin and recessed on the other side for the engagement of the swivel plunger, which limits lateral rotation of the gun. The bipod bush is shrouded by the bracket, which is slotted to

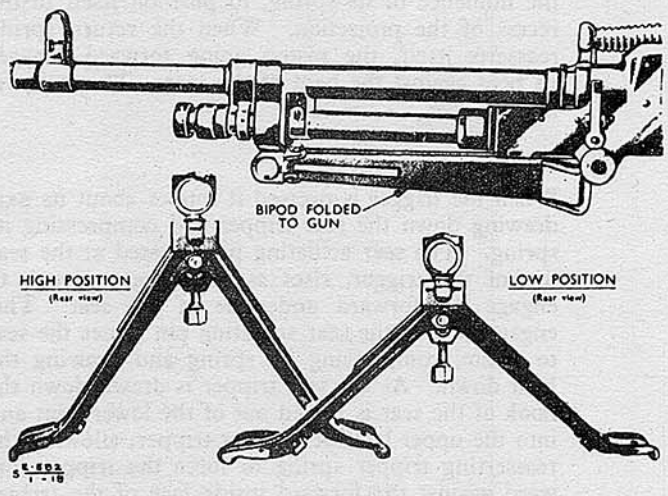

Fig 19—Bipod assembly

permit the rearward folding of the legs, and formed at the bottom with lugs and slots for the attachment and adjustment of the legs. The legs are secured to the bracket on a common hinge bolt and ribs on the upper ends of the legs engage recesses in the bracket when the legs are splayed and ensure rigidity of the bipod. The legs are fitted with springs which keep them in the splayed position. The hinge bolt of the legs is mounted in a movable block which can be raised or lowered by an adjustment thumbscrew. This controls the spread of the legs and the height of the gun above the ground. The legs are fitted with shoes and small retention hooks. When the legs are closed and folded back under the gun the hooks enter slots on the body and are retained by a spring-loaded catch.

ACTION OF THE MECHANISM

Cocking by hand

26. As the cocking handle is pulled to the rear, the cocking stud, being engaged in a recess in the piston extension commences to withdraw the piston. The return spring and telescopic rod are compressed and a projection on the underside of the piston extension forces the ejection opening cover catch to disengage. The cover then flies open under the pressure of its hinge spring and remains open. (Should the ejection opening cover be closed after cocking, it would similarly be opened during forward movement). Immediately the piston commences to move, the firing pin, being positively engaged by its rear end in the piston extension post, is withdrawn from the face of the breech block. The top end of the locking lever link, being pulled back by the piston extension post, causes the bottom end to rise and to lift the rear end of the locking lever out of engagement with the locking shoulder. The breech is then unlocked and the breech block commences to move. As the breech block travels backwards the spring-loaded actuating roller on its top face slides across the plate of the feed arm and locates itself in the feed arm channel. This action only occurs on initial cocking—at all other times the actuating roller is permanently engaged in the feed arm channel. The breech block and piston continue to the rear until, after depressing the sear against its spring, the piston is forced forward by the compressed return spring and cocks on the sear. The sear spring, having reasserted itself, ensures the engagement of the bent of the sear and the bent of the piston.

Forward action

27. Gun cocked, first round against the cartridge stop. Pressure on the trigger releases the bent of the sear from the bent on the piston and the compressed return spring forces the piston and breech block forward. The first round in the belt is positioned against the cartridge stops and held there by the inner feed pawls. It is also under downward pressure from the spring-loaded cartridge guide pawl. As the feed horns of the breech block come into contact with the base of the round, the round is pushed forward and its front end deflected down by the cartridge guide pawl. The front of the round now comes under the sloping face of the bullet guide in the body, which leads it into the chamber. The base of the round moves down the face of the breech block and positions itself in the front of the cartridge recess, against the front of the ejector and the forward inclined face of the extractor. As the round becomes fully chambered, against the shoulder in the chamber, and the breech block continues forward to the fully locked position, the extractor rides the rim of the cartridge, under the influence of its spring, and the spring-loaded ejector is depressed. During the first half of forward movement, and while the first round is being forced out of the belt, the feed pawls remain stationary. As soon as the base of the first round is clear of the belt link, the roller on the top of the breech block reaches the bend in the channel of the feed lever. The front end of the feed lever commences to move to the right. The outer feed pawls, which are engaged behind the second round, also move to the right while the inner feed pawls move to the left. The feed pawls are linked to the feed arm by a system of levers, and rounds are fed up to the cartridge stops in two stages. At the completion of forward movement the inner pawls have engaged behind the round also, and the round is in the 'half-feed' position. In this position both inner and outer feed pawls are engaged behind the same round. As the breech block comes toward the end of forward movement the inclined cam surfaces on the upper faces of the locking lever come into contact with the underside of the locking cams in the body. This occurs when the breech block has about an inch to travel and the effect is to slow the breech block slightly in relation to the piston as the locking lever descends. When the rear bottom edge of the locking lever is immediately over the front edge of the locking shoulder, the upward curving faces of the locking lever come into contact with the rear curved faces of the locking cams in the body. The downward swing of the locking lever is rapidly accelerated and the forward speed of the breech block is arrested, due to the articulated action of the joint between breech block and piston. The breech is now locked. The piston continues its forward movement. The top end of the locking lever link overturns the vertical and a toggle breech lock is made. The firing pin, attached to the piston post, moves forward through the breech block and strikes the cartridge cap. Forward movement of piston and firing pin is arrested by the shoulder at the front end of the piston extension.

Backward action, mechanical safety and primary extraction

28. As the bullet passes the gas vent in the barrel, some of the propellant gas passes down on to the head of the piston and

the piston commences to move backwards, withdrawing the firing pin from the cartridge cap. During approximately the first $\frac{5}{8}$ in. of backward travel of the piston the breech remains closed and mechanical safety is ensured. The top end of the locking lever link is rotated backwards over the vertical and the breech is unlocked. Further backward movement of the piston causes the locking lever to commence rising out of engagement with the locking shoulder. Due to the angles of the locking faces on the locking lever and locking shoulder, a gap would now begin to open between the two locking faces, but as soon as the locking lever commences to rise the curving faces come into contact with the locking cams and a powerful backward leverage is exerted on the breech block. This ensures primary extraction of the case in the chamber and maintains the locking faces in contact until the locking lever is clear of the locking shoulder. The breech block now commences to travel to the rear. The inclined face under the locking lever rides on the top of the locking shoulder, forcing the lever up to its highest position. The upward swing of the lever is arrested by the two small lugs on the lever coming into contact with the breech block and by the lugs on the locking lever link coming into contact with the back of the locking lever. The same action now takes place as in cocking by hand with the exception of the feed pawls. As soon as the breech block commences to move, the second stage of feed commences. The inner feed pawl takes over and by the time the breech block is half-way to the rear the second round has been positioned against the cartridge stops. During this movement the outer feed pawls have moved to the left, ridden over, and engaged behind, the third round. The empty belt link has been pushed out of the right side of the feed tray. The fired cartridge case is extracted from the chamber by the extractor and as soon as the front of the case is clear of the chamber, the case is tipped downwards and out through the ejection slot by the spring-loaded ejector on the face of the breech block. The recoiling portions continue their backward movement, compressing the return spring, until the rear face of the piston extension strikes the buffer plate. Forward action then commences again and this cycle will continue until pressure is released from the trigger or ammunition is expended.

Action of the trigger mechanism

29. (*a*) **Cocking by hand**

When the recoiling portions are forward the state of the trigger mechanism is as follows. The hook of the sear engaged in the upper bent of the sear tripper holds the bent of the sear down. When the cocking handle is pulled to the rear its stud engaged in a recess in the right side, situated just to the rear of the ejection opening slot, pulls the piston and breech block to the rear. As the piston moves to the rear the rear face of the piston extension contacts the forward face of the sear tripper, forcing it to pivot to the rear and compress the tripper spring. This rearward pivoting of the sear tripper disengages the hook of the sear from the upper bent of the sear tripper. The reasserting sear spring, acting on the underside of the rear portion of the sear, forces the sear bent to rise and the hook of the sear to engage the lower bent of the sear tripper. As the recessed projection on the rear underside of the piston passes the sear tripper, the tripper rises under the influence of its spring. The rear face of the piston then slightly depresses the bent of sear which rises under the influence of its spring, to position itself in the recess of the projection. When the return spring reasserts itself, the piston going forward engages its bent against the bent of the sear. The action is now cocked.

(*b*) **Trigger pressed**

When the trigger is pressed it rotates about its axis drawing down the sear tripper and compressing its spring. The sear actuating pin, located at the rear top of the trigger, rises as the trigger pivots, to engage the forward underside of the sear. This engagement of the sear actuating pin forces the sear to rotate, compressing its spring and drawing the bent down. As the sear tripper is drawn down the hook of the sear is forced out of the lower bent and into the upper bent of the sear tripper, allowing the reasserting tripper spring to force the tripper forward against the forward inside face of the trigger housing. With the trigger pressed, both sear and sear tripper are held down and the recoiling portions will move forward and backward in automatic action until pressure on the trigger is released.

(*c*) **Releasing pressure on the trigger**

When the trigger pressure is released the sear spring forces the trigger forward allowing the sear tripper to rise and slightly depressing the bent of the sear a little more. It is now necessary for the piston to return once more to the rear. Its rear face contacting the forward face of the sear tripper disengages the hook of the sear from the upper bent of the tripper and allows the sear to pivot about its axis, under the influence of its spring and position the bent in line with the bent of the piston at the start of its forward movement. The tripper moves forward again against its stop in the trigger housing under the influence of its spring. The state of the trigger mechanism at this point is the same as at the conclusion of cocking by hand.

Safety catch

30. The safety catch is located in the trigger mechanism and operates laterally through the mechanism immediately under the head of the sear. When safety is applied, the catch is pressed from left to right. A projection downwards from the head of the sear then bears against the shaft of the safety catch and prevents the head of the sear from being depressed. When the safety catch is pressed from right to left a recess in the shaft of the catch registers with the sear projection and normal operation of the sear is restored.

WARNING

Under normal circumstances the safety catch may only be operated when the trigger mechanism has been tripped, the sear bent at its highest and the ACTION COCKED. However, it is possible to trip the trigger mechanism when attempting to cock by hand—the sear tripper having been tripped but the recoiling portions not taken sufficiently to the rear for the bents of sear and piston to engage. If the recoiling portions are now allowed to go forward the position of the trigger mechanism will be as follows. The sear will be at its highest in which position the safety

catch may only be applied. With the recoiling portions forward and the trigger mechanism in this position, the application of the safety catch to SAFE will lock the sear at its highest point. Any attempt to cock the gun by hand will now result in damage to the trigger mechanism. The safety catch must, therefore, never be applied with the recoiling portions forward.

Buffer action

31. When the buffer plate is struck by the rear face of the piston extension, the plate is pushed back on to the cone which is in turn pressed into the ring. The ring expands and frictions against the wall of the buffer tube. Behind the ring is a series of compression washers which absorb the remainder of the blow and then impart the initial forward impetus to the piston assembly. A separate buffer assembly (less butt) will be carried in the conversion kit for use in the sustained fire role.

MOUNTING, TRIPOD, 7·62 MM MG, L4A1

GENERAL

32. The tripod is designed to give stability and maximum strength consistent with small size and light weight. These features combine also to reduce the incidence of damage due to rough handling. For storage and transportation, legs and cradle collapse into a straight line and fit into a webbing holdall. Together with the heavy barrels, sustained fire buffer holdall and the optical sight case, the whole will be known as the gun conversion kit for the sustained fire role. The tripod incorporates its own recoil buffer unit, permits all round traverse and has a quick-release mechanism giving free traverse, elevation and depression. It also incorporates fine adjustment control of vertical deflection by eccentric cam, thus eliminating wear problems common to screwed elevating gears.

Legs

33. The legs are of tubular steel and are pivoted on bolts at their upper ends. On each leg, at the top, a circular serrated clutch face is machined. A central hole permits assembly on the pivot. A similar clutch face is formed on the tripod head. Operation of the leg jamming handle causes the leg clutch face to close up to the opposite face and remain in fixed engagement. When the jamming handle is released the clutch faces are forced apart by a coil spring inserted on the pivot between the faces. The jamming handle is attached to the end of the pivot bolt on a hinge pin. The hinged end of the handle has a cam face, so that the action of folding the handle forces the leg toward the head clutch face and jams it in any desired position. Indicator lines are cut on the circumference of the leg lugs to show maximum and minimum spread of legs on level ground. Each leg is fitted with a shoe, designed to give maximum stability to the mounting at all leg angles. One leg is longer than the other two. The tripod will normally be mounted with the long leg to the rear.

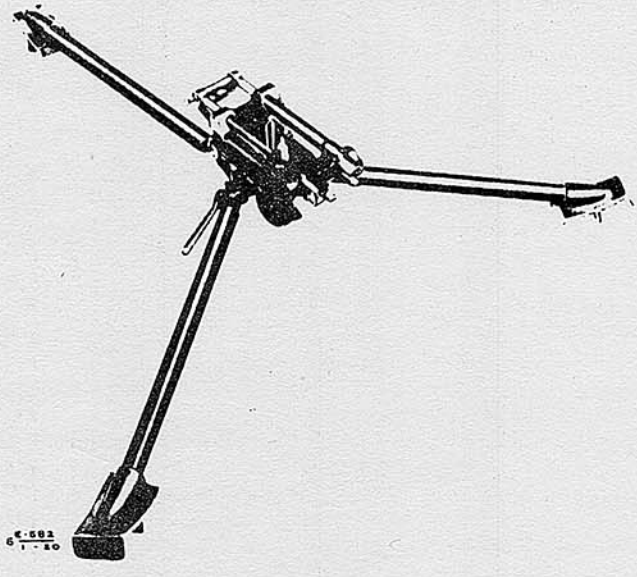

Fig 20—Mounting, tripod, 7·62 mm MG, L4A1

Tripod head

34. The tripod head is produced with three lugs on its exterior to carry the leg pivot bolts, jamming handles and clutch faces. Zero lines are engraved on the lugs. These lines, in conjunction with those engraved on the legs, indicate the spread of the legs. A traversing scale dial is fitted around the top of the head. A pointer on the cradle works in conjunction with this traversing dial. The position of the traversing dial can be set as required and is retained by friction. The tripod head is bored vertically to receive the tapered pintle of the cradle, which is held fast by a locknut and tab-washer.

Cradle assembly

35. The assembly consists of the cradle, recoil unit, elevating and traversing gears and is mounted on the ball-shaped head of the pintle. The ball joint is fitted with a quick-acting clamping mechanism, which is operated by a lever along the left side of the cradle. When the lever is moved, it revolves a bolt which passes through both halves of the ball clamp. The bolt is contra-screwed into each half of the clamp and when revolved, clamps or unclamps the cradle according to the direction of movement. The cradle is free on the ball joint when the lever is pushed forward. In this condition, free all round traverse and vertical deflection of $33\frac{3}{4}$ deg is permitted. When the lever is in the clamped—backward—position, it is sprung on to a stud on the left side of the cradle. This prevents accidental operation of the lever. The cradle is 'U' shaped with its open end to the rear. Above the cradle is the recoil unit, on which the gun is mounted by means of front and rear transverse mounting pins. The front mounting pin is retained by an Allen screw working in a keyway in the pin. The rear mounting pin is carried in the gun, with a spare in the conversion kit. The front of the recoil unit is hinged in a forked bracket. This hinge permits vertical deflection of the gun independently of

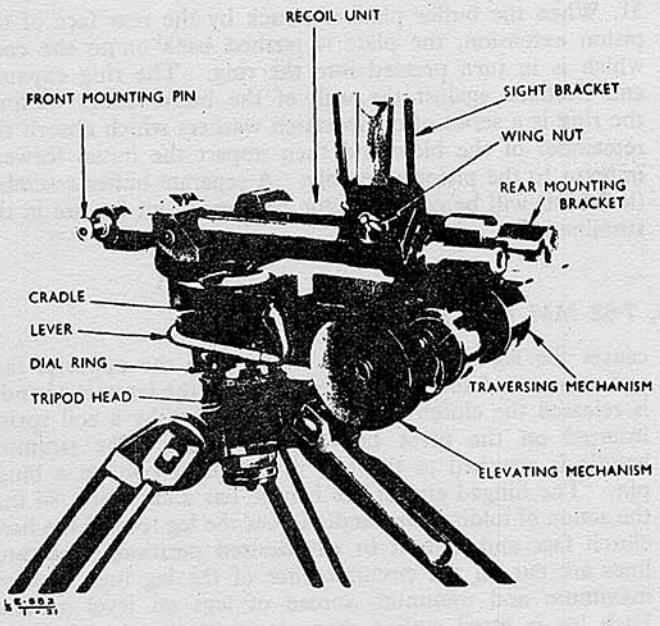

Fig 21—Cradle and recoil unit

the ball mounting and is used in conjunction with the fine adjustment elevating gear. The stem of the forked bracket passes through the ball joint pintle and is retained by a slotted nut secured by a setscrew. The stem is free to rotate and is used in conjunction with the fine adjustment traversing gear. The buffer mechanism is located in two parallel tubes and each consists of a central rod on which is mounted a fixed collar. Behind the collar is a long coil spring which takes up the recoil when the rod is forced backward by the firing gun. In front of the collar is a short spring which cushions the run-out of the buffer when firing stops. The springs are sealed in the tube by end bearings retained by circlips. The rod passes through the end bearings and the fit is such that ingress of sand, mud, etc into the buffer is prevented. The rear ends of the buffer tubes are connected by a cross-member, to the underside of which the elevating gear is connected by means of a small ball joint. The elevating and traversing gears are mounted at the rear of the cradle. The traversing control knob is on the right and the gear is a conventional screw and traversing nut. On the traversing nut is mounted the elevating gear through which all adjustments are transmitted to the recoil buffer and the gun. The traversing control knob may be set to give smooth continuous traverse or traverse by controlled clicks. The knob is pulled outward to put the clicker into operation. The full range of fine adjustment traverse is 11¼ deg. The elevating control knob is on the left. The knob is connected by a shaft to an eccentric boss on the traversing nut and, when rotated, imparts movement in the vertical plane to the recoil buffer and the gun. A locking quadrant is fitted between the elevating knob and the cradle. It can be readily applied after adjustment of the elevating gear to prevent further movement.

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END

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Chapter 1 - Machine Guns, L7A1 and L7A2

Errata

Note: This Page 0 is to be filed immediately in front of Page 1.

1. The following amendment is to be made to the regulation:-

Page 1, Issue 1 dated 2 Apr 68:-

'INDEX TO FIGURES' insert after Fig 7:-

'7A	Profile of sear bents	18A
7B	Jig for testing return springs 7.62 mm MG ...	18B'

Page 15, Issue 2 dated 20 Nov 68:-

Para 42.a. Delete: 'Trials have shown ..... to be sentenced 'Y'.'

Insert: 'Check particularly at this point. If cracks exist here or in any other part of the body the gun is to be sentenced 'Y'.'

Page 1, Issue 1 dated 2 Apr 68:-

'SUBJECT INDEX' insert after 'Gun assembled':-

'Rate of fire	... ...	64
Gun balancing	... ...	68'

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Chapter 1 - Machine Guns, 7.62 mm, L7A1 and L7A2

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INTRODUCTION

1. This regulation details the stripping, assembly, adjustment, inspection, repair and sentence for the Machine Guns, 7.62 mm, L7A1 and L7A2, at Unit level. After experience in use this regulation may require amendment or the addition of new material. Suggestions should be sent to HQ Technical Group REME.

STRIPPING - MAIN GROUPS

2. a. General: Check that the gun is safe, by pulling back the cocking handle and holding it to the rear, raising the feed mechanism housing and feed tray and inspecting the breech for presence of live rounds. Close the feed tray and housing. Press the trigger and allow the recoiling portions to go forward under control. Close the ejection opening cover.

b. Butt: Steady the gun with the left hand. Grip the butt well forward with right hand, at the same time depressing the butt catch with right forefinger. Slide the butt upwards and out of the body.

c. Return spring and rod: Press rear end of telescopic rod forward and upward to clear the locating pin from its recess in the body. Draw out the return spring and rod.

d. Breech block and piston assembly: With one hand covering the rear of the gun, pull back sharply on the cocking handle and clear the assembly from the rear of the body.

e. Barrel: Engage the carrying handle in the recess of the barrel locking nut. Holding the gun upright, depress the locking nut latch, rotate the carrying handle to the vertical position and slide the barrel forward.

ASSEMBLY - MAIN GROUPS

3. Reverse the order of stripping. When inserting the piston and breech block assembly into body hold the breech block forward with locking lever up. Keep the sear depressed to clear it from the piston extension. Rotate the gun to the vertical position before assembling the barrel. This is necessary because, without the barrel, the gun slightly overturns the usual stop position.

STRIPPING - DETAIL

Bipod

4. Lean the gun against the right stop. Insert a drift through the hole in the bipod adaptor and tap back the pin into its housing (Fig 1). Rotate the bipod 90 deg and slide it off the gas cylinder. Remove the lock pin from the castellated nut and remove the nut and washer from the leg axis screw. Maintaining control of the legs, push out the axis screw and remove the legs. Remove the distance piece and thumbscrew from the bipod head hinge. With a screw-driver, press in the bipod head plunger against its detent and spring and rotate 90 deg in either direction. Remove the bipod head plunger, detent plunger and spring. Rotate the head on the bushing and the pin securing the adaptor will be exposed. Tap the pin right through (Fig 2) withdraw the adaptor from the bushing and the bushing from the head. The two helical torsion springs are retained by lightly riveted pins. They should only be removed, when necessary, during repair. The pins are shouldered and should be driven out from the small diameter end.

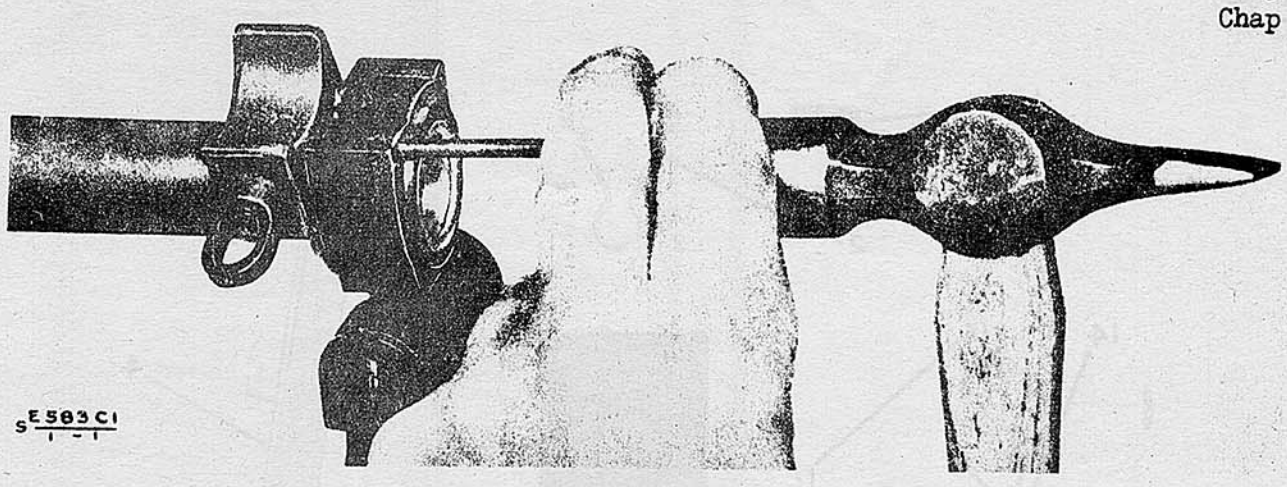


Fig 1 - Removal of bipod

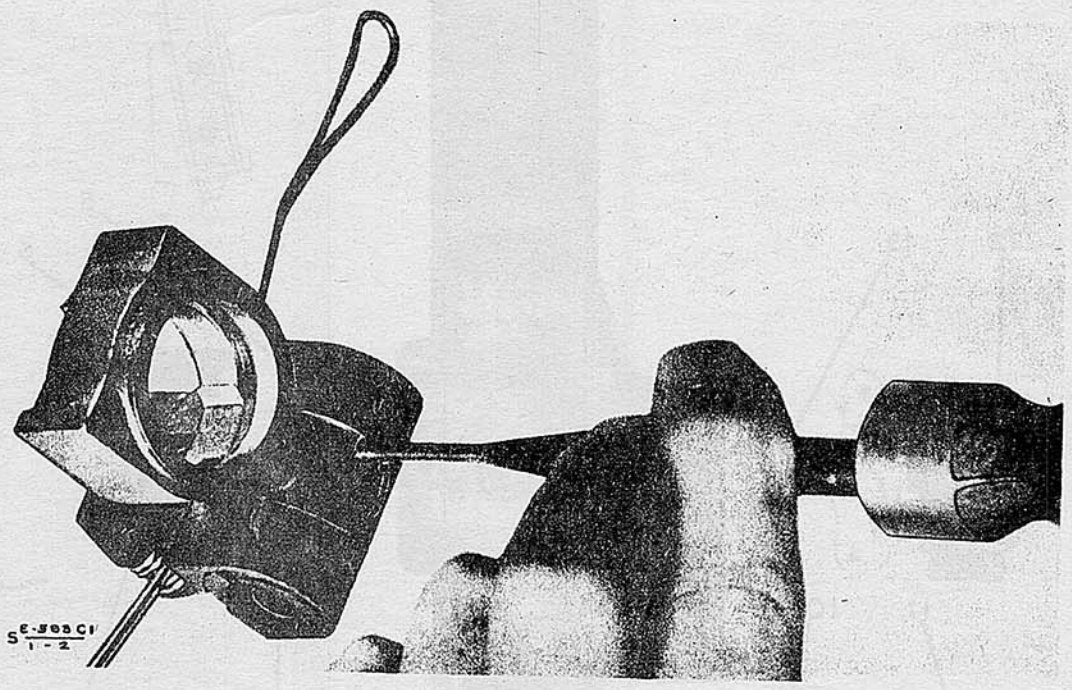


Fig 2 - Removal of bipod adaptor

Body

5. Trigger Mechanism: Push out the centre pin from the quick-release pin securing the rear of the trigger mechanism assembly, remove the quick-release pin, remove trigger mechanism assembly downward and backwards. Remove screws and grips. Press back on the trigger pawl and set the safety catch to 'F' (FIRE). Rotate the safety catch 90 deg until its flat is downwards and push it out. Push out the sear pin. Push out the sear spring pin, hold up the rear of the sear and remove the helical torsion spring. Push out the trigger pin and remove the trigger group and sear. Disengage the hook of the sear from the pawl and remove the sear. Push out the trigger guard pin from right to left and remove the guard.

Note: Further stripping of the trigger group components should not be attempted, other than to replace unserviceable items.

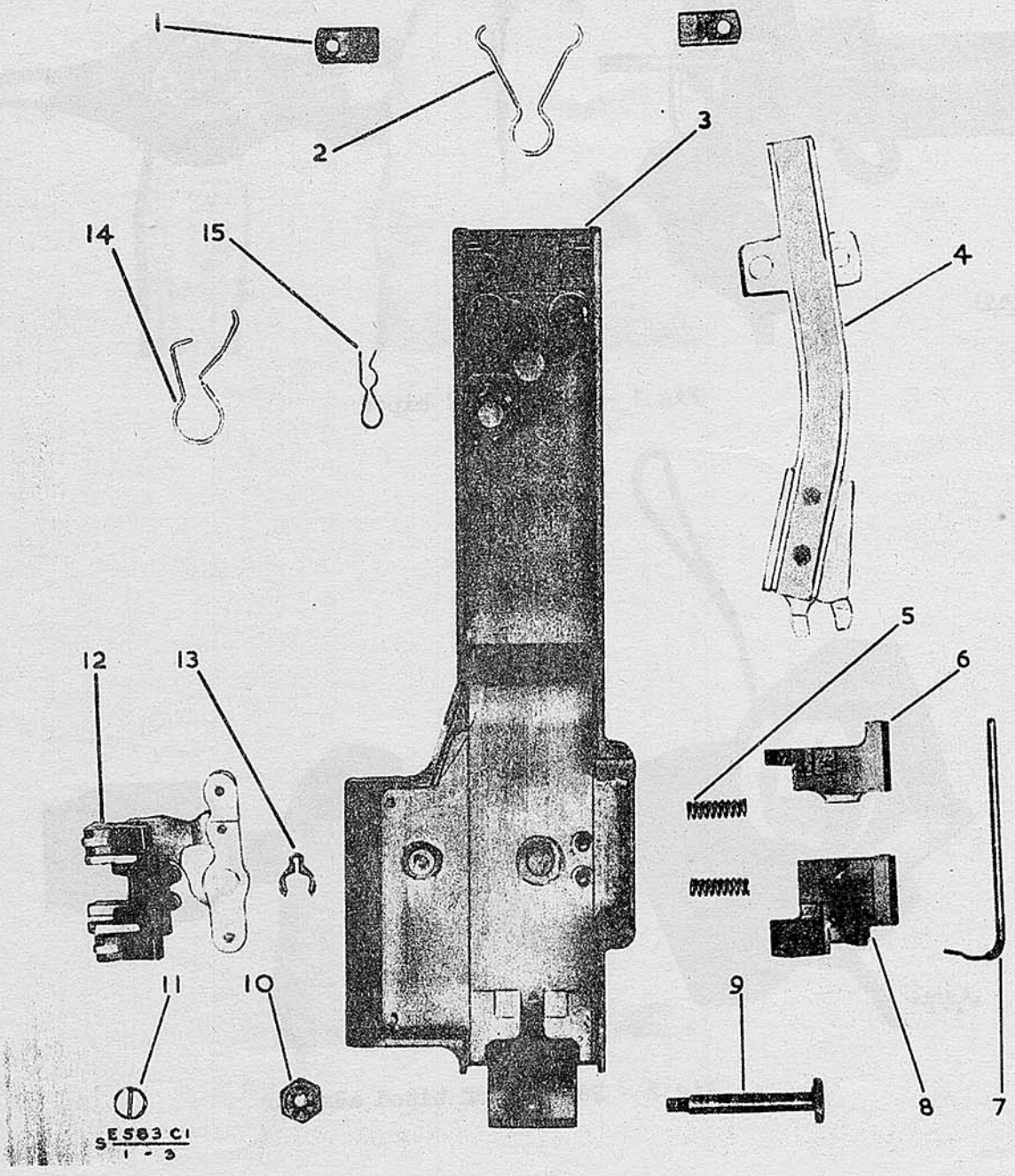


Fig 3 - Feed Mechanism housing - detail
(Latest pattern components)

1. Latch
2. Clip latch
3. Housing
4. Feed arm
5. Spring (cartridge pawls)
6. Cartridge guide pawl
7. Pin
8. Cartridge stripping pawl
9. Bolt
10. Nut
11. Lock pin
12. Feed pawl assembly
13. Ring, retaining
14. Clip, feed arm
15. Clip, securing feed arm

6. Feed Mechanism assembly (Fig 3) Remove lock pin, nut and hingebolt. Remove and separate housing and feed tray. Lay housing upside down on the bench, feed pawls to the left and, whilst maintaining pressure on the cartridge pawl or pawls (where later pattern fitted (Supp 1)) pull out the axis pin. Remove the pawl (pawls) and springs. To remove the feed arm, lift long arm of the actuating spring clip with a screwdriver and engage it behind the short upturned arm. Remove the spring clip securing the feed arm, and remove the feed arm from its pivot. To remove the feed pawls assembly push off the retaining ring from the pivot and lift off the assembly. Remove the four feed pawl springs only when necessary, the two outer feed pawl springs are longer than the inner springs. The remainder of the feed pawl assembly is riveted together and should not be stripped. Lift out the feed arm actuating spring. Compress and remove the spring clip for the housing latches and remove the latches. On the body, press in the housing retaining plunger, drive out the retaining pin and remove plunger and two springs.

7. Sling swivel: Drift forward the bipod retaining pin until the swivel assembly can be removed from its housing. No further stripping of the swivel assembly is possible.

8. Barrel locking latch: Push forward the split axis pin, remove the latch and spring.

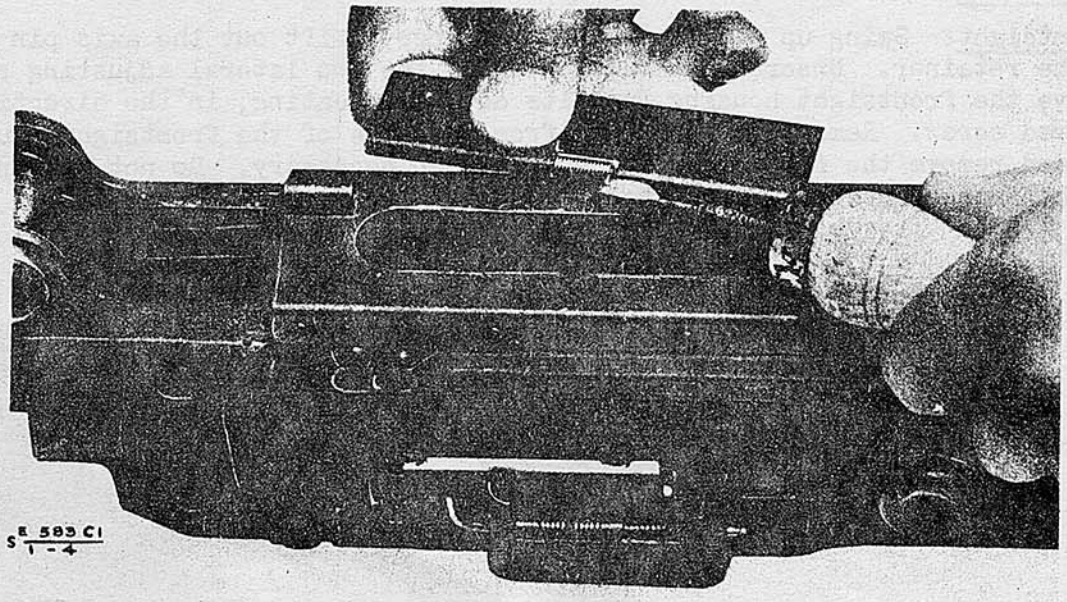


Fig 4 - Removal of cover, ejection opening

9. Backsight: Drift out the aperture sight axis pin whilst maintaining downward pressure against the plunger and spring. Remove the plunger and spring. Remove the slide stop screw, compress the slide latches and remove the slide from the sight. Further stripping of the slide should not be carried out other than to replace unserviceable items. Latch springs may be prised out for replacement purposes.

10. Cocking handle assembly: At the front of the cocking handle slide are two vertical pins. Tap out the rear pin and remove the cocking stud. Push the slide forward and remove it from the body. Tap out the plunger retaining pin from the slide and remove the plunger and spring.

11. Cover, ejection opening: Pull back the cover axis sufficiently to clear the pin from its front bearing. Insert a small screwdriver, or a flat strip of metal similar to a 6 in. rule, under the end of the torsion hinge spring which bears against the inside of the ejection slot, and raise the spring clear of the body (Fig 4). Swing the front of the assembly away from the gun and lift it clear. Remove the hinge pin and spring from the cover. Drift out the pin retaining spring and plunger of the cover catch and remove the spring and plunger.

12. Latch, retaining bipod: Place the actuating lever to the right (FREE) position and allow the latch to spring up. Line up the spring axis pin with the rear holes in the body and drift out the pin. Remove the latch and spring. Do not attempt to strip the retainer further.

13. Coverplate, access: Depress the spring at the rear end of the plate and slide the plate out of its guides to the rear.

Barrel assembly

14. Frontsight: Swing up the frontsight retainer, drift out the axis pin and remove the retainer. Unscrew and remove one of the two lateral adjusting screws and remove the frontsight housing from its dovetail seating, in the direction of the removed screw. Remove the lock pin from the base of the frontsight housing. Unscrew and remove the frontsight blade only when necessary. Do not attempt to remove the frontsight block from the barrel.

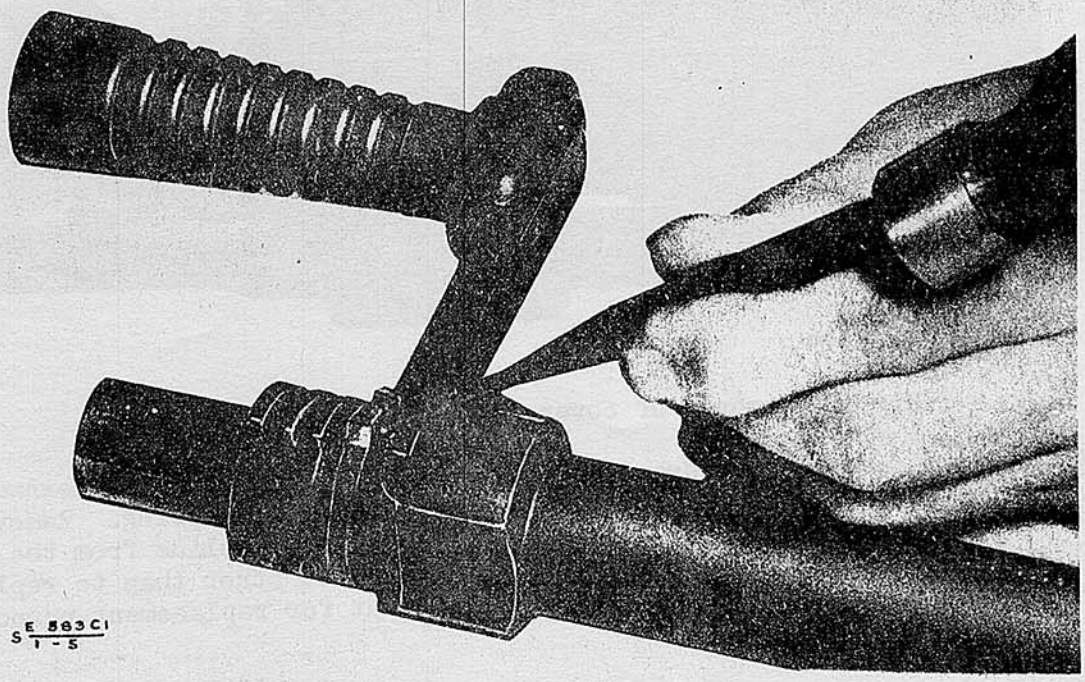


Fig 5 - Removal of barrel locking nut and carrying handle

15. Barrel locking nut and carrying handle: Drift back the pin through the flange of the locking nut until the front end of the pin is flush with the front face of the flange (Fig 5). Unscrew the locking nut from the barrel in a clockwise direction, holding up the carrying handle to clear projections on the nut flange. Still holding up the handle, to prevent damage to the barrel threads, slide off the carrying handle assembly. Remove the pin from the round castellated nut in the grip. Take a firm hold on the stem of the carrying handle, unscrew the nut and pull off the grip. Separate the handle, spring and plunger from the arm.

16. Gas regulator assembly: Unscrew the regulator taking care that the split collet of the gas plug is not lost. Remove the split collet and withdraw the gas plug. Push down the tab of the lockwasher inside the regulator knob and, holding the knob in a vice to prevent twisting of the indicator, unscrew and remove the nut and the lockwasher. Withdraw the knob from the regulator screw, taking care not to lose the small key between the knob and screw. Remove the tension spring and screw from the sleeve (Fig 6).

Note: The complete stripping of the gas regulator assembly should only be undertaken when carbon deposit is excessive or repair or replacement of component parts is necessary.

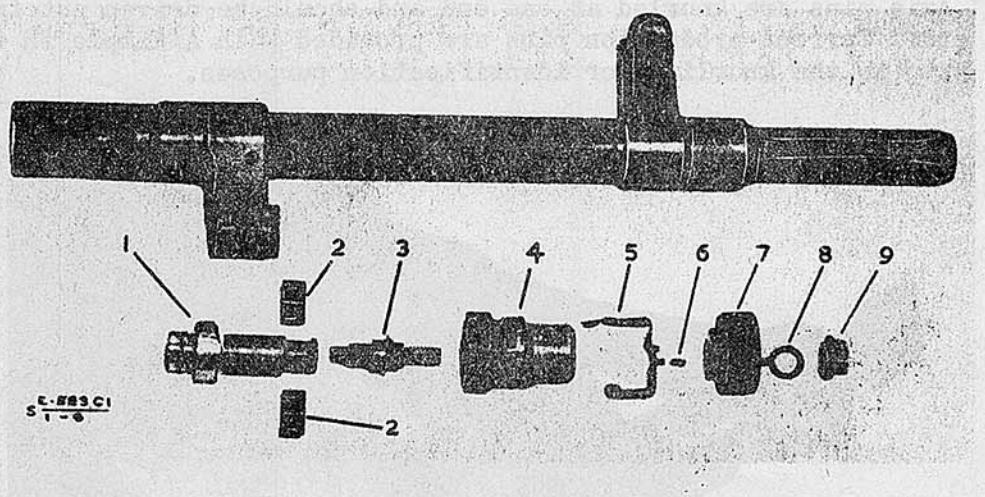


Fig 6 - Gas regulator - detail

1. Gas plug
2. Split collet
3. Stud (screw)
4. Sleeve
5. Tension spring
6. Key
7. Regulator knob
8. Lock washer
9. Nut

Breech block and piston assembly

17. Push out the upper spring-loaded link pin from the piston post and remove the breech block and link. Withdraw the firing pin from the piston post. Engage the Tool, Adjusting, SA, No 1, Mk 1 (C1/1005-99-960-4554) in the slot of the extractor plunger and with the other end of the tool engaged in the slot of the locking lever, pull back the extractor plunger by depressing the locking lever, and lift out the extractor. Release the plunger and remove it together with its spring. Hold the ejector under compression, tap out the ejector pin and remove the ejector and spring under control. The spring-loaded roller and piston stem are to be stripped only when necessary for repair. In each case it will be necessary to remove the riveted retaining pin.

Return spring assembly

18. This should be stripped only when necessary for repair. Compress the return spring on its rod from the front and remove the socket. In original assemblies the socket is retained by a transverse pin which must first be removed but on later pattern assemblies and those fitted in L7A2 guns the socket is secured by grade A Loctite and has no securing pin.

Butt and buffer assembly

19. Remove the butt plate screws and butt plate. Unscrew and remove the stock screw from the butt. Remove the buffer assembly from the front. Do not remove the detent spring housing unless necessary for repair. Remove butt swivel assembly. To strip the buffer assembly, prise up the tab of the lockwasher from the slot in the housing, unscrew and remove the bolt, lockwasher, tube and spring tension washers. Gently tap the buffer into the housing from the front so that the tapered bushing and packing is pushed to the rear. Push the tapered bushing and buffer forward again to release the packing, and remove it from the housing. Remove the tapered bushing and buffer. Hold the butt latch with spring under compression. Drift out the latch stop pin, allow the latch to swing over under control and remove its plunger and spring. Drift out the axis pin and remove the latch

Note: Axis pins are knurled at one end and should be driven out towards that end. Current production pins are provided with a dimple in the end opposite to the knurling for identification purposes.

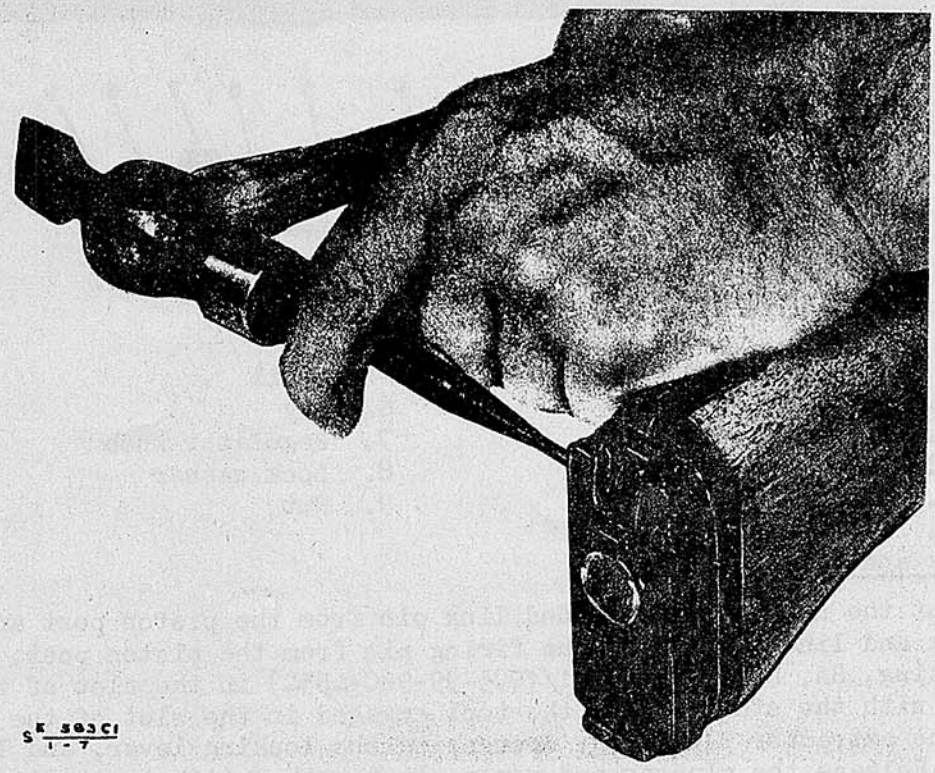


Fig 7 - Removal of butt latch

ASSEMBLY - DETAIL

Butt and buffer assembly

20. Reverse the order of stripping. When assembling the eleven spring-tension washers into the housing, the front washer (first in) is to be inserted with its concave face forward. The remainder are to be inserted in pairs, each pair having concave faces together. A new lockwasher must be used, the larger tab of the washer engaging the recess in the housing. Screw the bolt fully home before setting the smaller tab into a bolt recess. The spring-tension washers should now be under initial compression.

Return spring assembly

21. Reverse the order of stripping. When securing socket with Loctite use sealing compound, Loctite AV (H1/8030-99-220-1024).

Breech block and piston assembly

22. Reverse the order of stripping. When assembling ejector see that the pin is assembled with the split uppermost. Ensure that the ball of the firing pin is in its recess in the piston extension.

Barrel assembly

23. Gas regulator assembly: Insert the gas plug into the gas block from the rear and, holding the plug forward, screw in the regulator screw finger tight, with its shoulder against the front end of the plug. Assemble the split collet to the front end of the plug and fit the regulator sleeve over the assembly from the front, leaving the front end of the screw protruding through the sleeve. Assemble the tension spring on the screw and position the pointer at '0' on the sleeve. Position the small key in its keyway in the screw with its rounded corners to left and right and facing toward the breech. Two keyways in the centre bore of the regulator knob permit the knob to be assembled in either of two positions on the screw. Select that keyway in the knob which, when assembled to the screw, will allow two of the external recesses of the knob into register with the two tabs of the tension spring. Press the knob fully home into engagement with the tension spring and assemble the lockwasher and nut inside the knob. A new lockwasher should always be used after stripping, and should be fitted in the following manner:-

a. With pliers, set the double-angled tab back slightly so that its end is level with the plane of the washer. Place the washer over the screw with the right-angled tab uppermost, assemble the nut and locate the right-angled tab in the nut recess.

b. Continue screwing on the nut but before the washer is gripped check that other tab is diametrally opposite. This ensures central positioning of the washer.

c. When the nut is tight set the tab down slightly into one of the holes in the knob. If no hole is coincident unscrew the nut to bring the next hole into line.

24. Barrel locking nut and carrying handle: Insert the spring and plunger into the handle and slide the handle into the arm, ensuring that the head of the plunger seats correctly into its recess in the arm. Compress the spring, and slide on the grip; replace the nut securing the grip and its fixing pin. With the carrying handle spring under slight compression to avoid damage to the barrel threads, slide the carrying handle on to the barrel. Screw on the barrel locking nut with its flange forward until it meets the carrying handle catch. Raise the catch and screw the nut right home. Unscrew the nut, if necessary, just sufficient for the carrying handle catch to drop into its recess in the nut flange. Drive forward the pin in the nut flange so that the rear end of the pin is flush with the surface of the flange. This prevents the nut being unscrewed.

25. Frontsight: When assembling the frontsight retainer the rounded corners should be at the bottom and under the hinge pin. The frontsight bed should be assembled into the dovetailed block so that the hinge of the frontsight retainer is to the front. Should the frontsight have been disturbed, it must be screwed fully home in its bed and then unscrewed two complete turns and secured with the retainers.

Bipod

26. Carefully grip the lower part of the bipod head, cutaway portion to the front, in the vice and insert the bushing, plain end to the left and stepped hole uppermost. Insert stem of the adaptor into the bushing checking that the recess for limiting bipod rotation is to the front. Rotate the adaptor forward and insert the adaptor retaining pin into the bushing until the bushing is free to rotate inside the head. The adaptor should now have free but limited rotation in the bushing. Assemble detent, plunger and spring to the bushing; pushing against spring pressure and turning through 90 deg to secure. Assemble the thumbscrew and distance piece to the head. With the assembly in the same position ie small hole in adaptor at top left, assemble leg springs and legs. Note that the lengthened spring for the new pattern thumbscrew is fitted to the left and the legs are fitted so that their retaining hooks are uppermost and the axis screw is inserted from the underside. The nut should be sufficiently tight to allow free movement of the legs but without undue play. Assemble lock pin. After assembling the bipod to the gas cylinder retain by tapping the pin in the gas cylinder through to protrude into the bipod adaptor recess.

Body

27. Coverplate, access: Reverse order of stripping.

28. Barrel locking latch: Reverse order of stripping.

29. Cover, ejection opening: Lay the cover on the bench, catch upward and hinge to the left. Lay the spring in the gap, with the front end of the spring above and the rear end below, the cover. Insert the axis pin from the rear through the cover and spring until the front end of the pin is flush with the front end of cover. Hold the cover in the right hand and, with a small screwdriver, or suitable flat piece of metal, in the left hand, pull the lower (rear) end of the spring round so that it points away from the cover. Holding up the rear end of the spring, engage the axis pin between its rear mounts and swing the cover into position. Hold the cover firmly, release the spring so that it bears against the inside of the body and push home the axis pin. Test the operation of the cover.

30. Latch retaining bipod: When assembling ensure that the outside ends of the spring are against the underside of the retainer. The spring axis pin, when assembled, should allow free forward and backward movement of the retainer in its guides in the body. Fold the retainer down forward against the spring and place the catch lever to the left (locked) position.

31. Front sling swivel: When assembling the retaining pin, the front end of the pin should be flush or below the front face of the barrel support.

32. Backsight: Assemble the slide on the aperture sight with the catches pointing toward the aperture. The flat side of the slide will be on the high range graduations where it can engage the steps of the ramp.

33. Cocking handle assembly: The two vertical pins in the front of the assembly should be sufficiently tight to ensure that they do not shake out during operation of the gun.

34. Housing, feed mechanism assembly (Fig 3)

a. The two housing latches are interchangeable. When assembling the latch spring over its stud, the concave face of the spring is to be towards the underside of the housing. Ensure that the spring is correctly seated in its groove round the stud.

b. Replace the four feed pawl springs, with the two longer springs fitted to the outer feed pawls and place the feed pawl linkage on its pivot - securing it with the retaining ring. Position the feed arm actuating spring on the feed arm pivot and ensure that it is correctly seated into the recess around the pivot with the long arm of the spring hooked behind the short arm. Assemble the feed arm with its forked end engaging the roller of the feed pawl linkage. Assemble the retaining clip from the front with the straight leg towards the side of the cover. Unhook the long arm of the actuating spring and engage it in its recess in the side of the feed arm.

c. (1) Original pattern cartridge pawl - Lay the housing upside down with the hinge nearest. Insert the end of the cartridge guide pawl pin into its hole on the right of the housing, a sufficient distance to retain it. Lay the guide pawl on the bench with hinge to the left and projecting stop downwards. Lay the guide pawl torsion spring in the hinge of the pawl with the bent arm of the spring pointing away to the right. Pick up the pawl and spring together, and stand them, spring downward and stop to the rear, in line with the axis pin. Push forward the axis pin through the pawl and spring as far as the front edge of the pawl. Hold the inner feed pawls over to the left, swing the guide pawl down against its spring and when the pawl stop is clear of the right inside face of the housing, pull the pawl backwards. It will now be in its correct position. Align the compression spring in front of the axis pin and push the pin forward through the spring and through the hole in the housing.

(2) New pattern cartridge pawls - Place springs over locating studs. Place pawls in position and push pin home.

d. Assemble the detent plunger and springs to the body, place the housing assembly and feed tray in position, drive in the pin, spring, plunger and insert hinge bolt from the right. Assemble nut and lock pin.

35. Trigger mechanism: Reverse the order of stripping, ensuring that the hook of the sear is engaged through the sear tripper before the trigger and tripper are assembled. Ensure that the lower arm of the sear spring is against the pin in the bottom of the trigger and not between the pin and trigger. Finally, trip the sear, insert the safety catch, rotate it to its correct position and assemble the grips.

ZEROING

36. a. Check that the registered numbers on body and barrel, and breech block agree. Check that the sights are secure, barrel and gas cylinder are dry and gun correctly lubricated. Ensure that barrel is securely held by the barrel locking nut.

b. The gun may be fired from the bipod or from a serviceable tripod with the legs well bedded in and sandbagged.

Range:	25 m or 100 m
Sights:	200 m

c. Fire warming and sighting shots as necessary. When firing single shots it is essential that the single round is first loaded into a link before being placed in the feed tray otherwise damage to the round or feed mechanism may result.

d. Position of MPI:

25m; 3/4 ±1/4 in. above point of aim
100m; 3 ±1 in. above point of aim

e. Adjustment of frontsight:

Two heights of frontsight are available -

No 1	11.8 mm	(.465 in.)
No 2	9.8 mm	(.386 in.)

These dimensions are from the top of the blade to the underneath face of the lower platform. The frontsight number is marked on the side of the blade. The stem of the frontsight has approximately 5.1/2 threads but the number of turns available from the start to the fully screwed down position is approximately 7.1/2. Each half turn of the frontsight will raise or lower the MPI 1/2 in. at 25m and 2 in. at 100m. Lateral adjustment is made by moving the frontsight assembly by means of the adjusting screws. If the shooting error is left the frontsight is moved to the left by unscrewing the left screw and tightening the right and vice versa. One turn of the adjusting screws will move the MPI 3/4 in. at 25m and 3 in. at 100m. When the zero is correct, check that the lateral adjusting screws are tight and that the frontsight retainer is holding the frontsight rigid.

Note: These Pages 13-18, 18A, 23 and 24, Issue 2, supersede Pages 13-18 and 23, Issue 1, dated 2 Apr 68. Revised/additional info: marked ●.

f. Limit of adjustment of frontsight: Both the No 1 and No 2 sight may be adjusted to the fully screwed-in position. The limit to which either sight may be unscrewed is governed by its rigidity when the retainer is in place. Provided that approximately one complete thread is engaged, and the sight is rigid and cannot be turned the adjustment is satisfactory. Where possible the sight should be left with room for both upward and downward adjustment.

Note: When the No 1 sight is screwed fully down, the same adjustment can be obtained by fitting a No 2 sight unscrewed approximately 2 turns. When the No 2 sight is unscrewed to the limit given, the same adjustment can be obtained by fitting a No 1 sight unscrewed approximately 4 turns.

The limit of lateral adjustment is reached when the side of the frontsight protector is flush with the frontsight block.

g. Grouping capacity: A burst of 5 shots should form a 2 in. group at 25m or an 8 in. group at 100m.

INSPECTION, REPAIR, AND SENTENCE

Safety precautions

37. Before commencing any operation on the weapon observe the safety precautions detailed in para 2.a.

General

38. The gun is to be inspected, repaired and sentenced in accordance with instructions contained in the following paragraphs. Components and assemblies are to be inspected for wear, burrs, distortion or damage, and checked for correct assembly and functioning. Where necessary they are to be replaced by new components, or restored to serviceability by the minimum amount of stoning or filing. Original contours are to be maintained as far as possible and if doubt of serviceability exists it must be resolved by the satisfactory functioning or otherwise of the gun or the part in question. When a gun is beyond repair capabilities at Unit level or when difficulty is encountered in carrying out normal repair, the gun should be sentenced 'Y' (S Arm A 161).

Rustproofing

39. a. Rustproofing is to be carried out, under local arrangements, when necessary. In view of the use of aluminium alloy in the manufacture of many components it is necessary to ensure that none of these components are subjected to the phosphating process. Care must be taken to see that small alloy components are not included with steel components when guns are prepared for rustproofing. Aluminium alloy components are:-

Handle, carrying	Grip, handle, cocking
● Arm, carrying handle	Housing, feed mechanism
Nut, carrying handle	Plunger detent (feed mechanism housing)

Housing, buffer
Latch, stock butt
Bolt (buffer)
Screw, stock butt
Socket, return spring rod
Latch, retaining bipod
Housing, trigger mechanism
Trigger
Bracket, infra-red sight
Ø Bipod assembly (less adjusting screw and springs)

Ø Future production of carrying handle arms and bipod bushings is to be of steel. With the possibility of some exceptions it will be found that L7A2 guns are already fitted with the new specification components.

b. Anodised components which have become worn and present a bright surface on the exterior of the gun, may be painted black. Paint, priming, zinc chrome brushing (H1/8010-99-910-6662 , 1/2 gal can) should be used to increase adhesion of the surface coat.

Registered numbers

40. a. The number of the barrel and breech block must agree with the Master Number on the side of the body (see Note to para 44).

b. When numbering new barrels or renumbering used barrels, the number is to be stamped on the right-hand side, adjacent to the existing marking using 1/8 in. stamps. On used barrels the superseded number must be lightly barred out by the use of a sharp chisel. Breech block numbers must be located on the right-hand side. The breech blocks of some guns in service are not numbered; where these are encountered or when a new breech block is fitted, the weapon number is to be etched on. Where facilities are not available in the Unit, assistance of the supporting workshop is to be obtained.

c. Barrels forming part of sustained fire kits are not serially numbered when first issued. On receipt, or when otherwise found not numbered, these barrels are to be stamped with the number of the mounting in the kit to which they belong. The manufacturers identification letters of the mounting (UE) and year of manufacture must not be included. To identify individual barrels the numbers are to be followed by a space and the letters A and B respectively, eg A 228 A and A 228 B.

Locking devices

41. Check that all pins, retainers, circlips and locking washers are present and where necessary correctly retained. The lock pins for the hinge screws of bipod and feed mechanism housing should be assembled so that when in position the ring is under spring tension against the castellated nut.

Body

42. Check that:-

a. The body is free from distortion, burrs, and loose rivets. Check for fractures. Due to the omission of a particular radius during the machining of some side plates, cracks have subsequently appeared extending from the

top of one or other of the side plates down to the large rivet securing the front block. Trials have shown that where cracking is arrested by the top rivet hole the gun is to be considered serviceable in all respects and safe to fire. Should the cracking extend beyond this limit or other cracks exist the gun is to be sentenced 'Y'.

b. The locking shoulder is not damaged. Minor blemishes affecting the top edge of the locking face only, may be ignored.

c. The gas cylinder is secure and in alignment (checked visually). If misaligned or loose sentence the gun 'Y'. The wearing or lifting of chrome in the cylinder is to be ignored unless the free movement of the piston is affected.

d. The backsight slide and catches function satisfactorily and apertures are undamaged. Check legibility of figures and the positive retention of the aperture in upright position under spring pressure.

e. The barrel locking latch bracket is not loose. If loose, sentence the gun 'Y'. Check positive action of the latch under spring pressure.

f. The ejection opening cover is held firmly in the closed position. If the friction catch and cover are serviceable and the fault remains, sentence the gun 'Y'.

g. The front mounting bush is secure and accepts a new condition mounting pin. No high limit for this hole has yet been determined. Serviceability is to be assessed from results of accuracy tests when other factors affecting accuracy have been considered or eliminated. If the bush is loose or damaged or when doubt of serviceability exists sentence the gun 'Y'.

Note: The front mounting bush must not be used as a clamping point as this will affect the assembly conditions and cause looseness of the components.

Bipod assembly

43. Check that:-

a. The adaptor fits correctly on the gas cylinder and has limited rotation in the bushing against spring pressure. Check that the retaining pin is fully forward when bipod is assembled to the gun but allows free movement.

b. The bushing turns freely in the head; that spring and plunger are operative and correctly retained.

c. Leg springs operate correctly. They must open and hold the legs against the head in the fully spread position. Fit new springs where necessary; the rivets can be used again if removed carefully.

d. The thumbscrew has free action. Check that, on the later pattern where fitted, the ends of the spring engaging the square extend beyond the edge. Slightly set the ends to give protrusion if necessary. Future production springs are to be longer at this point.

e. Stop-plates on legs are not worn, fractured or loose. Sentence the bipod 'Y' if new stop-plates or rivets are required.

Barrel assembly

44. Check that:-

a. The bore and chamber are clean and free from bends, cuts, bulges, and cord-wear. Check that Gauge, plug, 0.295 in., passes through the bore. If the chrome plating in the lead is lifting check serviceability by use of Gauge, plug, 0.306 in. Barrels are to be sentenced unserviceable and exchanged when the leading face of the gauge enters the barrel more than 4 in. from the breech face. Where chambers have defects which affect extraction, the barrels are to be exchanged. Defects in the bore of a minor nature are to be ignored if barrel is otherwise serviceable and accuracy is maintained (see para 36 and S Arm A 518).

b. The frontsight has a clear and undamaged outline and is rigidly held when the retainer is in position. See that the frontsight is fitted so that the hinge of the retainer is at the front and that rounded corner of retainer is at the bottom of hinge. The retainer should be retained in the closed position by the nib. Check that clicker actions of lock pin and serrations of screws are satisfactory. Change pin or screws where necessary.

c. The flash suppressor is secure on the barrel and not misaligned.

d. The carrying handle assembly functions correctly and that handle rotates independently of the barrel locking nut. If replacing the Pin, straight, headless (-0785), use Steel, mild, wire, hard drawn, 24 s.w.g. G2/GB 16522.

e. The barrel locking nut is correctly assembled, screwed up as far as possible and retained by the pin.

f. The gas regulator assembly is correctly assembled; with the knob screwed fully home the indicator arm of the tension spring should point to, or be in the region of, the 0. The indicator arm must positively engage the notches of the sleeve and retain the regulator in its set position.

Note: When fitting and numbering a barrel to a gun the full number of the weapon must be marked on the barrel, eg BL 65 A 2048. Where the manufacturers identification letters of year of manufacture conflict with those on the body, eg one being UE and the other BL, the characters on the barrel are to be cancelled by a light chisel mark. They must remain decipherable.

Feed Mechanism assembly

45. Check that:-

a. The housing is not distorted and seats evenly on the gun. Check for cracks. If slight cracking exists at the corners between the hinge and the housing, this is acceptable. If cracking becomes pronounced, and weakness in the housing

Note: This Issue 3, Page 17, 18, 18A, supersedes Issue 2, Pages 17,18 and 18A, dated 20 Nov 68. Fig 7A is new. Revised text marked ●.

● is apparent, the housing is to be renewed.

b. The retaining ring for the pawl assembly is in place and is a close fit in the cannelure. If it is loose, or too easily removed, check width between the jaws. The manufacturing dimensions of the gap are 0.245 in. High and 0.230 in. Low. Where accurate measurements cannot be taken they must be used as a guide only. If in excess of the High figure fit a new ring which should be checked before assembly. If stud is worn and serviceable retaining ring is ineffective, sentence the housing 'Y'.

c. The linkage pins are free from excessive looseness; lightly peen the ends of the pins where necessary but see that freedom of movement is maintained and that rollers are free on their pivot.

d. Feed pawls marked F and R are fitted and are in the correct relative position (see S Arm E 587 Mod Instr No 1). Check that all pawls (cartridge and feed) move freely under firm spring pressure. If serviceability of any of the springs is in doubt check by comparison with new springs.

Note: See Supp 1 for action to be taken when replacement of one or more of the original pattern items is necessary

Feed tray

46. Check that when the feed tray is assembled to the gun, it fits freely over the body and does not interfere with the closing of the feed mechanism housing. Where the tray is distorted, repair as necessary being careful not to fracture the material. Check for the presence of hairline cracks in the highly stressed parts of the feed tray. Cracks of this nature in non-critical areas are acceptable but should be kept under observation. This includes cracks appearing in the region of the hinge. When the rate of increase of cracking is significant and weakness is apparent, fit a new feed tray. When cracks appear in the right-hand rear corner of the feed tray, fit a new feed tray.

Trigger Mechanism assembly

47. Check that:-

a. The housing assembles freely to the body and permits free assembly of the quick-release pin and rear mounting pin.

b. The grips are not distorted or split and allow free movement of the safety catch.

c. The trigger guard is firm and secured by a push fit pin. Lightly swage trigger guard where necessary.

● d. The mechanism is functioning satisfactorily. With mechanism separate from the gun check that pawl, trigger, and sear operate freely under spring pressure If doubt of serviceability of sear spring exists compare with a new spring and replace is necessary. The lower arm of the spring should be positioned against the pin in the trigger not between it and the trigger. Carefully check condition

of sear bents (Fig 7A). In some instances the front bent has been found to have less than the hardness required to maintain its profile in use. If the sharp edge of the front bent has been worn away to any degree fit a new sear. Note that where it is found that the front bent is worn it is an indication that the gun has been firing from the front bent due to incorrect gas setting. Before firing any functioning or zeroing tests it should be established that the gun is cocking on the rear bent (para 68). Check that the sear is of the latest 'M' type two-bent pattern. Instructions covering the demanding and fitting of 'M' type sears are contained in S Arm E 587 Mod Instr No 8, Pages 0-03. Check that the safety catch cannot be moved to the 'safe' position when the sear bent is down. If the trigger mechanism housing is fractured or damaged beyond repair it is to be replaced.

e. The quick-release pin and grooved pin are serviceable. The spring clip in the head of the quick release pin should not be fractured or distorted. The grooved pin should assemble freely but be retained by the engagement of the spring in the groove.

Breech block and piston assembly

48. Check that:-

a. The breech block is free from fracture and chipped surfaces, particularly in areas of feed horns, guides and stop faces. Check that the riveting of the locking lever and link is secure. Where the link rivets are not retained by the riveting, sentence the breech block 'Y'.

b. The roller assembly operates freely under spring pressure and the roller is retained by adequate riveting but rotates freely. Fit new components as required, the part numbers are given below. Ensure that the rivet is suitably expanded when a replacement is fitted.

C1/5320-13-010-0558	Rivet, solid
C1/1005-13-010-0606	Roller assembly, actuating feed arm
C1/5340-13-010-0557	Spring, helical, compression

c. The face of the breech block is not excessively ringed. When extent of pitting permits escape of gas from the face, the breech block is to be replaced. When fitting a new breech block, check cartridge headspace and firing pin protrusion before etching the gun number on the right-hand side.

d. The extractor, plunger and spring are serviceable and function correctly. The spring should be exchanged when the free length is less than 1.3 in. or effort to move the claw is less than 7 lbf. Place the trigger tester against the claw of the extractor and pull at right-angles to the breech block.

e. The ejector functions freely under spring pressure. Place a dummy round under the claw of the extractor and use it as a lever to operate the ejector. Test the effort necessary to operate the spring by holding the breech block between soft clams in a vice and placing the roller of the trigger tester against the neck of the dummy round. Take up the pressure of the spring and pull until the ejector is held flush with the cartridge seating by the base of the dummy round. The effort necessary to hold this position should not be less than 9 lbf.

Note: These Pages 18A-22, Issue 4, supersede Page 18A, Issue 3, dated 29 May 69 and Pages 19-22, Issue 1, dated 2 Apr 68. Fig 7B is additional. Revised text marked ⊙.

49. Piston assembly: Check that:-

a. The piston is straight and free from damage which affects the gas seal at the head.

b. The piston has some articulation and is assembled so that the dimension between the front face of the extension and the end of the piston is between 7.39/64 in. and 7.5/8 in. If the piston is unserviceable fit a new piston in accordance with the following instructions:-

(1) Clear riveted end of retaining pin and remove pin.

(2) Screw in new piston until dimension shown in Fig 8 is obtained.

(3) Using the existing hole in the extension ⊙ suitably mark the piston for the position of the retaining pin.

(4) At this stage check articulation of the piston. The total movement of the end of the piston in any one direction should be approx. 0.02 in. To assist in obtaining articulation a small amount of metal (not to exceed 0.008 in.) can be removed from the end of the piston.

(5) File the groove to the dimensions in Fig 8 at the marked position. There must be a slight clearance between the bottom of the groove and the pin in the assembled position.

(6) Assemble piston and a new retaining pin and check for articulation and length.

(7) When correct, expand ends of retaining pin and leave ends flush.

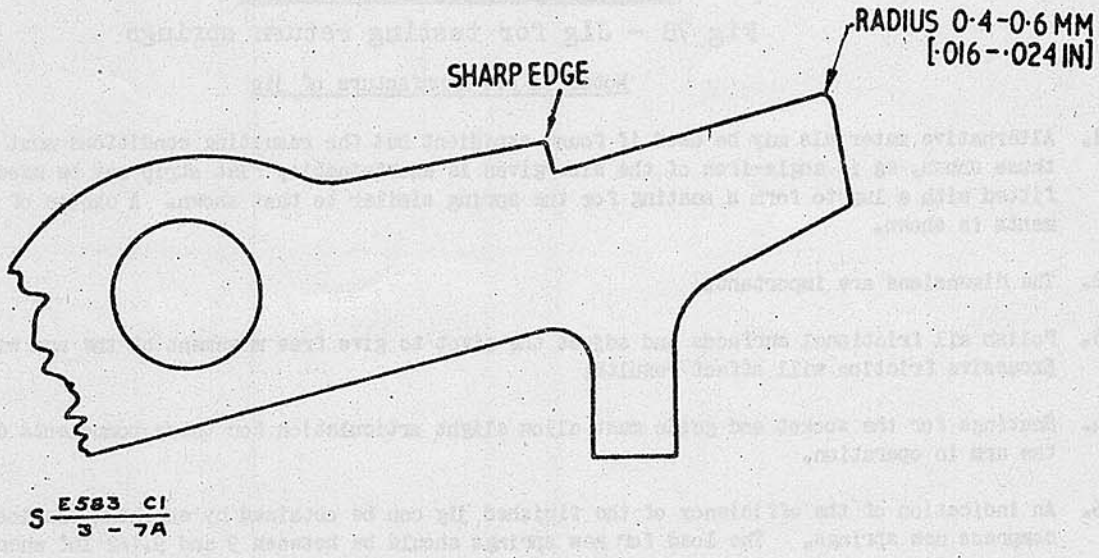


Fig 7A - Profile of Sear Bents

Distribution - Class 248. Code No 2
and 391. Code Special (82 N)

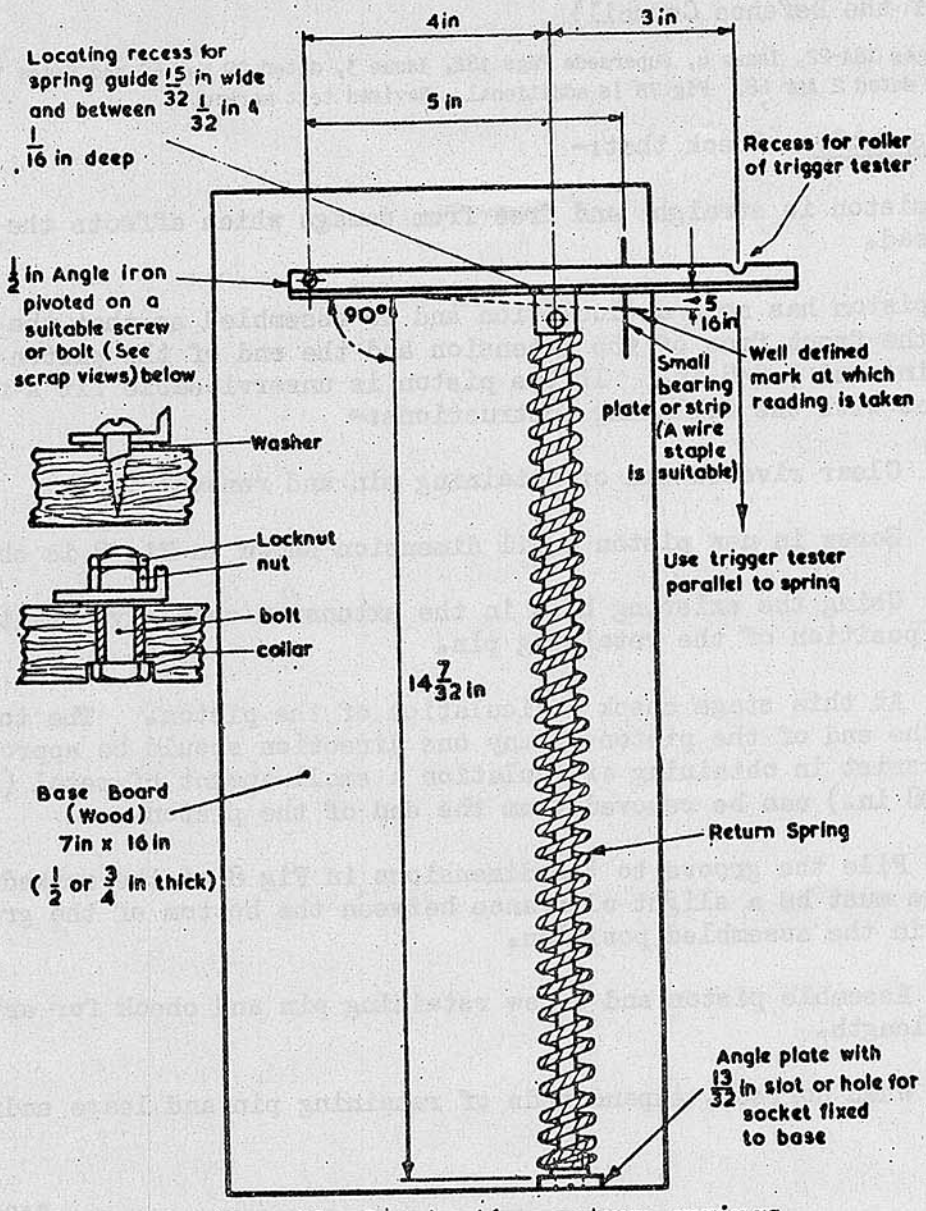

4in
3in
5 in
Locating recess for spring guide 15/32 in wide and between 1/32 in & 1/16 in deep
Recess for roller of trigger tester
½ in Angle iron pivoted on a suitable screw or bolt (See scrap views) below
90°
5/16in
Small bearing or strip (A wire staple is suitable)
plate
Well defined mark at which reading is taken
Washer
Locknut
nut
bolt
collar
Use trigger tester parallel to spring
14 7/32 in
Base Board (Wood) 7in x 16in (½ or ¾ in thick)
Return Spring
Angle plate with 13/32 in slot or hole for socket fixed to base

Fig 7B - Jig for testing return springs

Notes to aid manufacture of jig

1. Alternative materials may be used if found expedient but the resulting conditions must be identical with those shown, eg if angle-iron of the size given is unobtainable, flat strip may be used provided it is fitted with a lug to form a seating for the spring similar to that shown. A choice of pivot arrangements is shown.

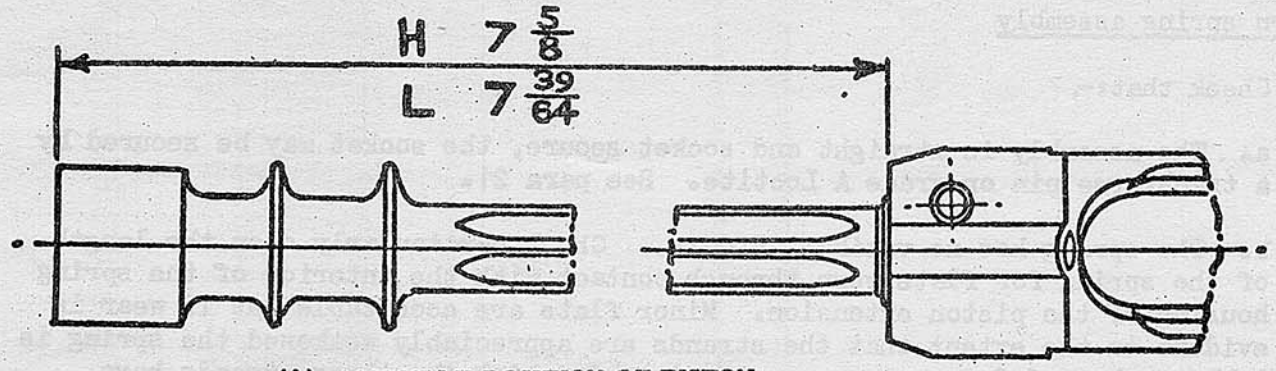
2. The dimensions are important.

3. Polish all frictional surfaces and adjust the pivot to give free movement of the arm without sloppiness. Excessive friction will affect results.

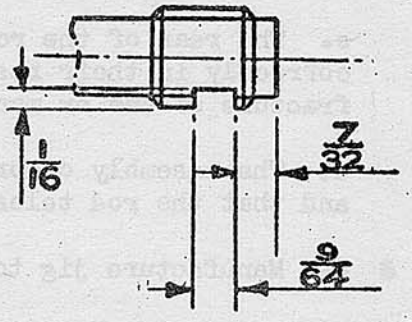
4. Seatings for the socket and guide must allow slight articulation for these components during movement of the arm in operation.

5. An indication of the efficiency of the finished jig can be obtained by checking the loads necessary to compress new springs. The load for new springs should be between 9 and 9.1/2 lbf when taken from store as assemblies. New springs drawn from stock and fitted to the rods will give figures approx 1/2 lbf in excess of these.

6. The jig should be provided with some means of securing it to the bench in a semi-permanent manner or provided with an additional hardwood block, secured to the underside, that can be clamped in a vice.



(A) ASSEMBLY POSITION OF PISTON



DIMENSIONS IN INCHES

(B) DETAILS OF PIN GROOVE

Fig 8 - Piston, assembly details

50. Firing Pin: Check that:-

a. The firing pin is straight and point is smoothly domed.

b. The spherical end is a close fit in the piston extension.

51. Piston and Breech Block assembly: Check that:-

a. There is complete freedom of movement between breech block, locking lever, link and firing pin. See that the firing pin is assembled correctly; spherical end in the recess of the piston extension. Where the firing pin has been assembled incorrectly, witness marks can be seen on the rear of the link and at the front of the firing pin seating. Provided there is no interference with the free movement of the firing pin this can be accepted but instances of incorrect assembly should be brought to the notice of the user whenever they occur, as it can enable a dangerous condition to exist when the gun is fired.

b. The link pin with its friction spring is functioning correctly.

c. The guideways and bearing surfaces on both breech block and piston are polished. Use fine emery cloth in the direction of sliding if necessary.

Return spring assembly

52. Check that:-

a. The assembly is straight and socket secure, the socket may be secured by a transverse pin or grade A Loctite. See para 21.

b. The spring has no visible defects. Check particularly over the length of the spring for flats worn through contact with the interior of the spring housing of the piston extension. Minor flats are acceptable but if wear is evident to the extent that the strands are appreciably weakened the spring is to be exchanged for a new one. Springs in which the three strands have become separated, so that individual strands protrude, are to be exchanged for new ones. Later pattern springs have the ends secured by tinning.

c. The rear of the rod and the solid rivet are free from burrs and seat correctly in their respective seatings. Incorrect seating can result in fracture of one or more of the assembly components.

d. The assembly compresses into the piston extension without undue friction and that the rod telescopes freely.

e. Manufacture jig to dimensions shown in Fig 7B.

f. Check that the effort necessary to compress the return spring 1/4 in. is not less than 7 lbf using the jig and following method of testing return spring assemblies (C1/1005-13-010-0515):-

(1) Assemble spring assembly to the jig as shown in Fig 7B.

(2) Apply roller of trigger to the recess in the arm and pull in a line parallel to the spring.

(3) Take up initial compression of the spring and then release it. Repeat a few times to ensure unrestricted movement of the extension rod.

(4) Apply the load slowly and note the reading when the mark is reached.

(5) Repeat as necessary to check the result.

Note: If the spring is held under compression at the mark ensure that the load required to reach it is maintained. Any relaxation of the load will affect the reading without necessarily giving return movement of the arm.

(6) If the load required to compress the spring to the mark on the jig is less than 7 lbf fit a new return spring.

Butt assembly, and buffer, recoil, assembly

53. Check that:-

a. The stock is free from splits and damage. Patches may be fitted where necessary providing the butt is not weakened and no two patches are in contact. Areas with minor surface abrasions and dents are to be restored to their original condition by filling and smoothing as necessary. Original contours are to be maintained.

b. The spring tension washers in the buffer are held under initial compression by the bolt and that the lock washer is present and effective. Buffers are to be dismantled annually and the washers inspected. Washers found to be fractured or collapsed are to be exchanged.

c. The buffer latch functions satisfactorily under spring pressure, and that return spring rod seating and flanges for assembly to the body are undamaged. Check that stronger pattern latch spring is fitted. Check weight in assembled position as follows:- Grip the recoil buffer, or butt assembly, in the vice so that the flanges are vertical and the latch uppermost. Hook the trigger tester over the acting end of the latch and pull horizontally. With the thumb held lightly in contact with latch and housing check effort required to move the latch. First movement should be between limits of 6-9 lbf.

d. The butt stock is tight on the housing and that all fittings are serviceable and screws secure. The butt assembly should be a good fit in the body but absolute tightness is not essential. Where movement between the butt and the body has become excessive through wear it should be reduced by careful swaging of the buffer housing flanges. Check that the flanges of the buffer housing are not fractured. If fractures are found or swaging to remedy looseness is not practicable fit a new housing.

Note: When fitting a new stock butt it will be necessary to transfer the clip, spring, tension (retaining butt screw) from the unserviceable butt or fit a new one - C1/5340-13-010-0540.

Gun assembled

54. Bipod: Check that:-

a. The bipod rotates freely on the gas cylinder and is retained by a correctly fitted pin.

b. The legs fold back under the gun, hook onto the body and are retained by the sliding latch.

55. Barrel: Check that:-

a. With gun held upright, barrel assembles freely and allows the carrying handle to rotate to the fully tightened position. In this position the barrel should be tight, however, due to the relative positions of the teeth on the barrel nut and teeth of the latch there may possibly be slight reverse rotational movement of the handle, ie where a tooth of the barrel nut almost but not quite engages a tooth of the latch and nut cannot be rotated further. In this instance a reverse rotation to the next tooth is possible. This movement can allow axial movement of the barrel up to a maximum of 0.002 in. and a slight looseness may be detected. Looseness within this limit is acceptable.

b. When the barrel nut is fully tightened it has not reached the limit of rotation with the barrel still loose. If limit of rotation is reached and a new barrel nut does not remedy the fault, the gun is to be sentenced 'Y'. Under no circumstances is metal to be removed from the stop-face on the body or adjustment made to the barrel threads in the body.

56. Cartridge headspace:

a. Remove butt, trigger mechanism and return spring assembly from gun. Remove extractor, plunger and spring from breech block. Insert Gauge, Armourers, Headspace, 1.6253 in. Mk 1, into chamber with the ejector clearance recess at 12 o'clock. Push forward on piston post. Breech should close completely. Repeat the procedure using Gauge, Armourers, Headspace, 1.645 in. Mk 2, breech should

not close. Ensure that barrel is pulled hard back against front bearing face of body and is not being held off by burrs or foreign matter. If headspace is incorrect exchange breech block and piston assembly. If still incorrect, replace original breech block and piston assembly and fit new barrel. If still incorrect fit new barrel and breech block and piston assembly. If still incorrect sentence 'Y'.

Note: Provided the barrel is always pulled back against the body face and the barrel locking nut has not reached its limit of travel, fitting of new barrel locking nuts can have no influence on cartridge headspace. When a new breech block has been fitted, etch the gun number on right side of block. Remove the number from the original breech block and keep the block as a spare if it is in all other respects serviceable.

b. When barrels forming part of a sustained fire conversion kit are being inspected they are to be assembled to a known serviceable gun and the headspace checked. If the headspace is outside the limits given check again in another serviceable gun for confirmation and reject barrel. If serviceability of a barrel is in doubt in this respect sentence it 'Y'.

57. Firing pin protrusion: With gun fully assembled less barrel, ensure that recoiling portions are fully forward. Insert small end of Gauge, Armourers, Firing Pin Protrusion, No 12, Mk 1, through front of body into contact with face of breech block. Protrusion, as indicated by the plunger at front end of gauge, should be between the steps on the front face, ie H0.035 in. L0.016 in. If protrusion is high reduce the point of the firing pin maintaining the original contour. If protrusion is low, exchange the firing pin and retest, adjusting as required.

58. Cover, ejection opening: Check that the cover is opened by contact with the piston during forward and backward movement of the piston. If cover fails to open it can be slightly set up at the centre whilst in the closed position. If fault persists fit new cover.

59. Cocking handle slide: Check that the slide is positively retained in the forward position. If body is worn excessively at point between front end of the slot and the retention dimple sentence the gun 'Y'. Check free movement of the slide in the guides and ensure that the cocking handle is securely riveted. Check security of the cocking stud retaining pin; it should be an interference fit, secure against accidental removal.

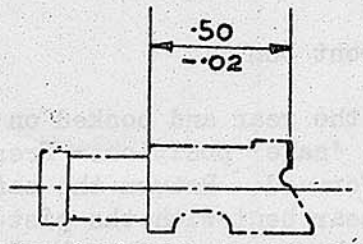
60. Feed Mechanism assembly: Check that:-

a. The housing seats evenly on the body and that the latches hold it securely.

b. The feed tray fits over the body freely and does not interfere with the closing of the feed mechanism housing.

c. The feed mechanism is held in the fully open position by the action of the detent plunger. Retention in the 60 deg position is not essential. When the plunger is worn and it fails to hold the housing in the fully open position it is to be adjusted in accordance with Fig 9.

61. Action: With trigger pressed, function the gun by hand to test for free movement of working parts. With a belt formed from dummy rounds and serviceable links test the feed, extraction and ejection. Adjust and recheck as required. If it is found that the front edge of the feed horns fouls the rear opening in the feed tray and checks the forward movement of the breech block, a slight chamfer may be formed on the vertical edge of the rear opening in the feed tray. It is important that the feed tray is checked first to ensure that the interference is not due to distortion. The internal dimensions of the slot must not be altered.



PLUNGER, DETENT (CI/1005-13-010-0599)

REMOVE METAL FROM THE POINT SHOWN BY THE FULL LINE, TO THE DIMENSION GIVEN

DIMENSIONS IN INCHES

Fig 9 - Feed Mechanism housing - repair

62. Trigger pull-off The trigger pull-off must be smooth and indicate a full engagement between sear and piston bent. On guns fitted with two-bent sears check that sear engagement in both positions is satisfactory. The effort of the trigger pull-off from the fully cocked position should be 8-14 lbf. Use a trigger tester held parallel to the bore for this test.

63. Applied safety - Tests

a. Action in the fired position.

(1) With the action forward in the fired position attempt to move the safety catch to the 'safe' position (from left to right). It should not be possible. Should it move fully across it will indicate either:-

(a) The recoiling parts have been pulled back far enough to trip the sear and then allowed to go forward,

or

(b) The trigger mechanism is defective; probably an unserviceable sear.

(2) If conditions at (a) apply, set the safety catch to the 'fire' position, pull the recoiling parts fully to the rear and allow them to go forward. Retest the safety in the fired position.

(3) If conditions at (b) apply, examine the trigger mechanism components and repair as necessary.

b. Action cocked on rear bent.

With the action to the rear and cocked on the rear bent of the sear, move the safety catch to the 'safe' position. Press the trigger. The recoiling parts should not move forward. If this occurs check all relevant components for wear or damage, and repair as necessary.

c. Action cocked on front bent.

With the action to the rear and cocked on the front bent of the sear, move the safety catch to the 'safe' position. Press the trigger. The recoiling parts should not move forward. Return the safety catch to the 'fire' position. The engagement of the sear bent with the piston bent must remain positive after this movement. If, on the return movement of the safety catch, the action flies forward or can be released by a firm jolt given to the gun, the gun is unsafe. Recheck relevant components for serviceability (especially whether 'M' type sear is fitted) and renew where necessary. If fault persists after a combination of new components has been tried, sentence the gun 'Y' and initiate defect action (AF G3660).

●64. Rate of fire

If, after reports from the user or for any other reason, doubt exists regarding the rate of fire of any gun, carry out the following action.

●65. Fire a functioning test with the gun concerned and check the rate of fire. This should be not less than 700 r.p.m. on No 6 gas setting. This is slightly less than 12 rounds per sec and, in the absence of a suitable measuring instrument, the rate of fire can only be approximated. A close approximation can be made by firing a suitable number of rounds in one burst and timing its duration by stop watch. Alternatively, where a new condition gun is available, it can be fired along with the suspect gun for comparison purposes.

●66. Improvement in the rate of fire can usually be made by attention to the following points:-

a. Gas regulator tension spring - incorrect assembly.

When the regulator assembly is screwed fully home, the indicator must be at, or as near as possible to, the '0' position.

b. Gas regulator sleeve - excessive wear or splaying of the gas block locating gap.

Check the fit of the sleeve over the gas block of the barrel by comparison with a new sleeve. Excessive play of a worn sleeve coupled with the effects of gas wash at the corner of the internal surface masking the gas holes in the gas block reduces the gas force on the piston.

c. Excessive friction

This can occur between moving parts of the feed mechanism and the recoiling parts. Check freedom of movement and lubrication of these points. Do not overlook the separate roller bearings of the feed mechanism housing. Eliminate doubtful components by fitting known serviceable ones for test purposes.

●67. If, after testing and repair, the rate of fire is below that required, or the gun is obviously sluggish in operation, sentence it 'Y'. Check that original components are refitted to the gun before sending to workshop.

Note: This Page contains additional information. Delete 'END of Chapter 1' from foot of Page 24.

68. Gun balancing

With the two-bent sear fitted it is possible for the piston to cock on either the front or rear bent on termination of a burst. The front bent is intended as a safety measure only and should not come into operation during normal functioning. Therefore it is essential to establish that the piston is cocking on the rear bent whenever firing ceases.

69. This can be done by a simple check involving the use of a white line painted on the right side of the body vide S Arm E 587 Mod Instr No 12

70. At the end of a fired burst apply the gun safety. Draw the cocking handle lightly to the rear and note the position at which contact with the piston is made. If at this point the cocking handle is in line with the white line, the piston bent is engaged with the rear bent of the sear. If the cocking handle is forward of the white line (approx 1/2 in.) the piston bent is engaged with the front bent.

71. Correct cocking is dependent on the right balance between the gas force on the piston and the resisting force of the return spring being obtained. Return springs should be checked for serviceability and gas adjustment made before functioning or 'zeroing tests are fired.

72. Adjust the gas setting as follows:-

a. Unscrew the gas regulator 6 notches from the fully closed position

b. Fire a short burst

c. Check that piston is cocked on rear bent (para 70).

d. Unscrew gas regulator 2 notches

e. Repeat b, c and d until gun fails to cock on the rear bent

f. Screw in gas regulator 4 notches

g. Fire a burst and re-check the sear engagement

73. The gun is now balanced and the gas setting should be noted for future use.

Note: Because return springs and gas sleeve assemblies have a definite bearing on the performance of the gun, these assemblies should be kept to their mated gun wherever possible.

G/98403/Wpns

END of Chapter 1